ESTABLISHED IN 1872

PAPER TRADE JOURNAL

With Which Is Combined

Vol. XCIII, No. 15

Thursday, October 8, 1931

Michigan Paper Mills Oppose Higher Freight Rate

J. F. Dougherty, Association Traffic Manager, Strenuously Objects to Proposed 15 Per Cent Increase Requested By Railroads, At Final Hearings Before Interstate Commerce Commission—Claims Rates Charged on Shipments Now Beyond Bounds of Just and Reasonable—Decision Expected Before End of Month

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., October 7, 1931.—Hearing of final argument was concluded last week by the Interstate Commerce Commmission in connection with the request of the railroads of the country for a blanket 15 per cent freight rate increase. It is probable that a decision will be rendered the latter part of this month.

During the closing hours of the arguments James F. Dougherty, traffic manager of the Michigan Paper Mills Traffic Association appeared, strenuously objecting to the proposed increase.

"The position of this protestant", said Mr. Dougherty, "is that the rates charged on our shipments, both in and outbound, are now beyond the bounds of 'just and reasonable' as compared with rates of our competitors for distances exceeding our distances by from 100 miles up to 300 miles. Our rates are actually higher in and of themselves for the shorter distances than are the rates of our competitors for the longer distances."

Would Create Additional Disadvantages

Mr. Dougherty told the Commission also that "a 15 per cent increase in our higher rates for shorter distances would create an additional disadvantage in the arbitraries now existing against us and would drive us out of many markets.

"Everyone in contact with freight rates and freight charges", continued Mr. Dougherty "recognizes that there are, today, many unjust and unreasonable rates; that the carriers charge some shippers more for movement of like kind of traffic than they charge others, and that there is undue and unreasonable preference and advantage given to some shippers and receivers with serious detrimental effect to others.

"That is common, public knowledge, known to all but far, far better known to the carriers' officials who are behind this plea.

"Yet, in spite of such knowledge, they ask this commission to increase the existing violations of the Act; to ignore the fact that the violations are present; to ignore the fact that industry, operating under disadvantages prohibited by the Act, staggering under the handicap of adverse rates that ignore entirely the geographical location, the value of the service to the shipper and the right of industry in their nearby, natural markets, cannot continue to exist if that illegal and unnatural disadvantage is increased.

Shippers Entitled to Protection

"And then the next step—they ask this commission to ignore very important parts of the very section of the Act under which they seek relief; parts put in to protect the shipper as well as the carriers. They ask that the commission disregard the requirement placed upon the commission that before relief, such as the carriers seek, can be granted, rates so established must be just and reasonable and that the commission shall modify or adjust rates (in addition to initiate and establish, so that the carriers as a whole or in groups or territories may earn a fair return under honest, efficient and economical management.

"Not a word in the Act that can be construed as requiring this commission to put some localities out of business to benefit railroads in another group; not a word requiring this commission to cause certain railroad groups to suffer decreased tonnage so that carriers in another group may increase their unduly low rates to bring a fair return.

Rates Now Too High

"Not a word that requires this commission to increase rates that are now too high; now far above the level of rates to and from other territories that were established in the carriers' mad scramble for tonnage to make industry bloom in a desert; higher than preferential rates given to industry located in the heart of supply of raw material and with other natural advantages far offsetting their disadvantage in distance; higher than such preferential rates after being increased 15 per cent."

Mr. Dougherty continued:

"Regardless of what may be the situation in territories other than Official Classification and Western Trunk Line the record indicates beyond all question that a 15 per cent increase, or any other increase, will cause a material reduction in carriers' revenues owing to motor truck and water competition.

"It will further decrease carriers' revenues by eliminating the long-haul traffic and substituting therefor

(Continued on page 64)

Activities of Fox River Valley Paper Mills

Thilmany Pulp & Paper Co. Orders 132-Inch Fourdrinier Paper Machine and Auxiliary Equipment for Kaukauna Plant—New Kraft Bleaching Unit to be Constructed Later—J. M. Conway Addresses Green Bay Manufacturers

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., October 5, 1931.—Instalation of an additional paper machine at the Thilmany Pulp and Paper Company, Kaukauna, Wis., in the near future is announced by M. A. Wertheimer, president. The machine and auxiliary equipment have been ordered. The improvement will consist of a 132-inch Fourdinier on which special grades for wrapping and other purposes will be made, incorporating special designs made by the marking roll process. Later on a new plant will be built for kraft bleaching so this product can be marketed with or without design. By the addition of this new machine, the company will be able to consume for its own use almost the entire output of its pulp mill, part of which was being sold commercially in the past.

The two machines, beaters, Jordans and other equipment of the company's Wisconsin Tissue Branch at Appleton have been moved to a new addition at the Kaukauna plant and will be set up ready for operation by January 1, 1932. This change will save the transportation of pulp from Kaukauna to Appleton, and will enable the company to pump the pulp direct from the chests to the machines. By making these changes, the Thilmany company expects to improve its economic condition considerably and make a better showing on earnings in the face of strenuous price cutting competition.

Shorter Working Week Advocated

One of the advocates of shorter working hours and days for paper mills is J. M. Conway, president of the Hoberg Paper and Fibre Company, Green Bay, Wis. His sentiments were expressed in an address last week before a group of Green Bay manufacturers.

"I personally believe a shorter working week and shorter working hours per day must come," he said. "Such a program is, I believe, an economic necessity unless some new industry springs up to take up the present unemployment, and there is no indication that it will.

"Our capitalistic system has worked perfectly up to this time, but during the past ten years, when it has made its most rapid strides in other lines, this system has done nothing to avoid such a thing as is now upon us. For the past ten years employers or labor have done nothing towards assuring employment to the country's laborers, although permanent employment of labor for at least 48 weeks each year is essential to prosperity."

Mr. Conway was instrumental in having a number of paper manufacturers present at a hearing in Green Bay before an interim committee of the Wisconsin legislature relative to unemployment insurance. Mill owners were urged to take greater interest in impending laws.

Vocational Classes to Resume

Evening classes of vocational schools throughout the Fox River Valley will again take up this season the manufacture of pulp and paper. Mill employees are being urged to attend so as to improve their knowledge of their jobs and the industry generally. Courses will include studies of various kinds of wood, preparation of mechanical, sulphite and sulphate pulp, preparation of rags and fibers, bleaching, refining, sizing and coloring of pulp, and a knowledge of machines and finishing processes.

Consolidated Mills—Safety Records

Safety records of the Appleton and Stevens Point mills of the Consolidated Water Power and Paper Company continue to grow and make history for the company. The Appleton mill still has a clean slate as to lost time injuries dating from February 16, 1930 and now aggregating more than nineteen months. The Stevens Point mill has more than a year to its credit, having had no accidents since August 3, 1930. The mill at Biron has operated since June 15, 1931 without accident, but the injury of one employee recently caused the main mill at Wisconsin Rapids to start all over again. The composite record of all the mills is now the best in the company's history.

Fall Tree Planting Started

Recent heavy rains have made it possible to start fall planting of trees in the Moquah, Flambeau and Oneida national forest units in northern Wisconsin. Crews are planting 900 acres in the Moquah area, and 100 acres each in the other two tracts. A much larger program is under way in the Huron national forest in Michigan, where 15,000 acres will be planted.

Forest Fire Control Plan

An important step in the new forest fire control program of the Wisconsin Conservation Commission is the plan to equip 1,700 county highway patrolmen in the forest areas with fire fighting tools. Each will be given a back pumper, a shovel and a mattock, and these men will form a network for detection and quick suppression of small fires. Last year $215,000 was spent for labor in fire fighting, and it is believed this cost can be reduced by co-operative effort with counties. Nineteen posts of the American Legion in the state have volunteered to assist in fire emergencies.

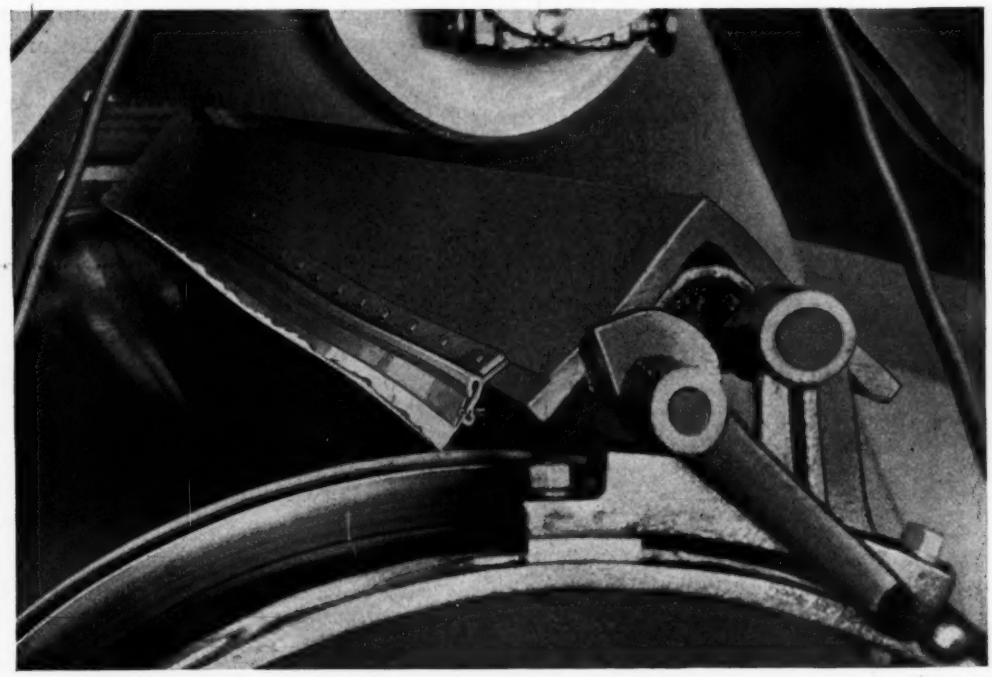
Sorg Estate Pays $153,000 Tax

DAYTON, Ohio, September 28, 1931.—The Butler county treasury was enriched this week by the payment of $153,000, representing the personal tax for the years 1925-26-27-28 and 1929, by the administrators of the estate of Mrs. Jennie Sorg, widow of the late Paul J. Sorg, paper manufacturer and capitalist of Middletown.

The payment is an adjustment on her personal property tax made in connection with settling of the estate.

Joseph H. Dubois, County Treasurer, personally received the payment, one of the largest single payments on personal property ever made in Butler county.

The administrators of the Sorg estate have made material progress in settling up the affairs of the late widow. The estate consisted of stock and securities of great value, not the least of which was in the paper manufacturing industry. The Sorg paper mills at Middletown were erected by the late manufacturer for his son, Paul, who died after a few years of mill management. The mills were continued under able management and have become one of the biggest and strongest mill enterprises in the country. Some time ago the Sorg properties were combined and are being operated successfully under the new plan.



The Vickery *Hi-Angle* Doctor is the last word in the scientific doctoring of dryers . . . . .

Write for the Vickery Hi-Angle Bulletin. It gives the complete story of this remarkable new development. At the same time ask for the bulletin on the Vickery Hi-Flex, the perfect Doctor for calender and super-calender rolls.

BIRD MACHINE COMPANY
South Walpole - Massachusetts

5120

Chicago Paper Market Conditions Irregular

Business Transacted Recently Consists Mainly of Purchases for Immediate Requirements—Demand for Rag Content Papers Shows Slight Improvement—Book Paper Situation Practically Unchanged—Coarse Paper Market Listless

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., October 3, 1931.—The major Fall improvement, more or less confidently expected by many members of Chicago's paper fraternity, has not as yet materialized to any extent, according to a summarization of reports received during the past week. Local conditions in this part of the United States, at least, are still sufficiently uncertain to cause hesitancy and only sufficient buying to fulfill immediate requirements. The wrapping paper market has shown no marked improvement. No. 1 kraft mills are reported running four or five days a week and prices are stabilized at about the level reached early in the summer. The jobbing trade finds demand in Chicago rather slow. Cover papers are fair. There is no change reported in book, with the mills represented here in Chicago reported running on a four or five day basis. In the news print market reports here and there shed some brightness on the picture. A few mills are running very close to full time but the majority are still operating only a part of the time. Rag content papers had an improved week. Other lines reported a somewhat slow position as the Fall pick-up remains hesitant about making an appearance. The waste paper market reflects the conditions in all grades of paper.

S. L. Willson to Address Paper Salesmen

Starting the second month and the fourth in the series of Fall and Winter weekly meetings the Middle West Division of the Salesmen's Association of the Paper Industry is looking forward with a great deal of interest to the appearance of Sidney L. Willson, president of the American Pulp and Paper Association, who is to speak at the regular Monday meeting of the local group on October 12 at the Hamilton Club. Mr. Willson will talk on the subject of merchandising and the salesmen are expecting a real treat as Mr. Willson's remarks will be backed up by many years of experience not only in the jobbing but also in the manufacturing branches of the paper industry.

Middle West Salesmen Win Golf Cup

The Middle West Division gained permanent possession of the valued and bitterly contested Harbison golf trophy by defeating the Eastern Division to the tune of 648 to 591. It was the third victory for the Middle West group and means that the trophy rests somewhere in this territory—perhaps in the cup department maintained by Harold Knott, or by the vice president of the district, Creighton Whiting. Plans are being made for a big evening celebration meeting early in November at which the salesmen will celebrate the victory. At that time the winners of the president's and *American Paper Merchant's* golf trophies will also be announced. A further treat will be the showing of moving pictures taken at the July golf outing at Westmoreland. That, alone, should be of interest to draw attendance from far and near. If the news is nosed about the boys might charge admission for these movies. Don't they pay good money to see how Bobby Jones does it?

Paperboard Industries Association Activities

One of the most interesting pieces of business transacted at the September meeting of the Paperboard Industries Association in Canada, released this week from headquarters in Chicago, was the appointment of a presidential nominating committee and group nominating committee members. The presidential committee of the Folding Box Group for the elections at the annual meeting of the association in New York City, November 17, 18 and 19, are E. V. Donaldson and John L. Barchard. The nominating committee for a vice president for the Folding Box Group consists of T. H. Goodspeed, J. L. Barchard, E. H. Braukman, E. V. Donaldson and E. R. Hankins. The paper board group's presidential nominating committee includes Sidney Frohman and Hugh Strange, while the group nominating committee is composed of T. H. Goodspeed, E. R. Hankins, A. A. Otens, C. S. Rutherford, A. B. Thomas. The container group presidential committee is composed of E. R. Hankins and M. M. Madson, while the group committee is made up of J. B. Fenton, J. M. Arndt, B. S. Hubbard, J. O. Hoerner and Samuel Kipnis.

Throughout the report from the Chicago office was also plenty of evidence that each group in the association is giving plenty of consideration to the subjects of business stabilization and continuity of employment. The container group, for example, appointed a committee, headed by Vice-President Dollison, to carefully study ways and means of improving conditions in the container industry in connection with the above mentioned program. A two hour discussion on the situation in the folding box industry, at which eleven suggestions for betterment were made, was another significant part of the September program.

E. V. Donaldson, Robert Gair Company; Samuel Samuels, of the American Corrugated Paper Products Corporation, and W. G. Latham, of the Fort Orange Paper Company, were appointed a committee to make arrangements for the annual dinner of the association to be held on Wednesday evening, November 18.

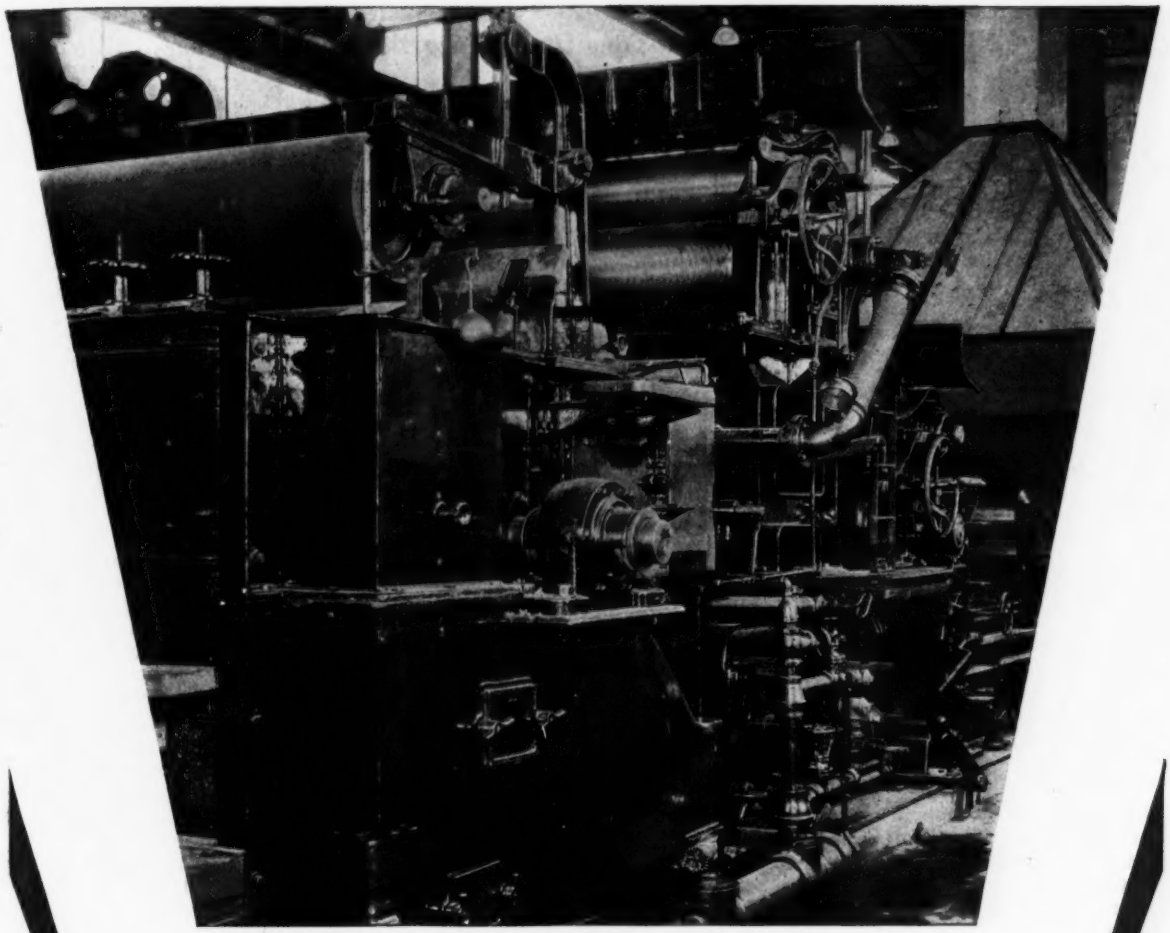
News of the Trade

From Milwaukee, less than one hundred miles up the line from Chicago, comes the news that charges that paper box manufacturers in that city have been engaged in a price fixing combine in restraint of trade were not substantiated at a recent hearing conducted by the Wisconsin Division of Markets. Further action now, say reports, can only come from the district attorney's office. The larger users of boxes testified at the hearing that competitive bids were always obtainable from nearly every manufacturer. The hearing was watched with interest by Chicago paper box manufacturers.

From the Chicago offices of the Northwest Paper Company at 537 South Dearborn street comes the report that the Cloquet mills of that company have installed mill equipment for producing tub-sized offsets and index bristols as well as specialty papers. In addition the mill will continue to furnish established lines of unsized papers. Quite naturally, this addition of equipment will permit the company to offer a better and wider variety of service than ever before.

Appointment of W. M. Dixon as vice-president in charge of sales for Container Corporation of America marks the return, say reports, to a plan of operations under centralized control which was dropped early in 1930 in favor of a divisional organization plan.

DOWNINGTOWN



FELT MACHINE · · · · · · SUCTION ROLL

Every Felt Machine built by this company for the past 15 years has been equipped with suction rolls, some of these being suction press. A few of the prominent manufacturers having Downingtown Felt Machines are Congoleum-Nairn, Inc., Philip Carey Mfg. Co., Flintkote Company, Barrett Co., and H. F. Watson Co. If you would like some information regarding the benefits obtained from the installation of Downingtown Suction Rolls on felt machines or on machines making practically every kind of paper or board, write us. Our Catalog No. 103 fully describes the roll. The Downingtown Manufacturing Company, Downingtown, Pennsylvania.

Abitibi Now Largest News Print Producer

With Daily Output of 2,013 Tons of Paper, Company Has Greatest Installed Capacity, Following Canada Power & Paper Shake Up—Total Capacity of Canadian Mills Remains Fixed at 12,376 Tons Daily Since Beginning of Year

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., October 5, 1931.—Now that the shake-up in Canada Power and Paper has been completed, and the Consolidated Paper Corporation set up, the fact emerges that Abitibi Power and Paper Company now has the largest installed capacity of any news print producer in Canada. The line-up of the principal producers in this respect is now as follows:

Company	Tons per Day
Abitibi	2,013
Consolidated Paper	1,944
International Paper	1,817
Price Bros.	1,020
St. Lawrence Corp.	951
Backus-Brooks	849
Powell River	650
Anglo-Canadian	480
Spruce Falls	480
Ontario	373
Pacific Mills	256
MacLaren	240
Mersey	240
J. R. Booth	158
Bathurst	140
Beaver	77
News Pulp	37

The total capacity of Canadian mills has remained fixed at 12,376 tons daily since the beginning of the year.

Meetings of Canada Power & Paper Subsidiaries

Meetings of the bondholders and shareholders of the Canada Power and Paper Corporation and constituent companies are scheduled for October 19 and 29 and November 5 and 6, to pass the necessary formal resolutions for merging these companies into the new Consolidated Paper Corporation. The latter has already secured a federal charter, which authorizes a capital stock of 2,000,000 shares of no par value and borrowing powers up to $80,000,000.

There are twenty-one meetings in all, with the first gathering that of Canada Power and Paper Corporation shareholders on the 19th of this month. To allow the requisite time for notices, the holders of Canada Power and Paper debentures, the Port Alfred and St. Maurice preferred and common shareholders and the Wayagamack and Laurentine shareholders hold their meetings on October 29.

The first meetings of bondholders are on November 5, when holders of St. Maurice, Port Alfred and Wayagamack bonds meet, followed by Belgo preferred and common shareholders. On November 6, Belgo and Anticosti bondholders and Anticosti preferred and common shareholders complete the series of meetings.

Having regard to the fixing of the date of the first meeting for October 19, the Securities Protective Committee formally extended the time for receiving deposits to October 10, 1931. This will regularize a large number of deposits received since August 31, the date of expiry of the last extension and will enable the issue of Certificates of Deposit under the plan for these securities. It will also permit of the deposit of the comparatively small percentage of shares and securities still outstanding, thereby enabling a generally uniform system of distribution of the new securities with the minimum of delay and expense.

Canada's Domestic News Print Consumption

It would appear that consumption of news print in Canada is showing marked and steady gains. Last year the total production of Canadian news print mills amounted to 2,504,000 tons. Of this 2,331,000 tons were exported, leaving a balance of 173,000 tons, representing the apparent domestic consumption of news print. In 1919, the apparent consumption, estimated on the same basis, was 95,000 tons.

Official Figures on the Industry

The Dominion Bureau of Statistics has just issued a report showing that the gross value of production in the pulp and paper industry in Canada amounted in 1930 to $215,674,246. This was a decrease of 11.6 per cent from the figure for 1929.

The 81 mills manufacturing pulp produced 3,619,345 tons valued at $112,355,872 as compared to 4,021,229 tons in 1929 valued at $129,033,154 representing a decrease of 10.0 per cent in quality and 12.9 per cent in value. Of the total for 1930 the combined pulp and paper mills produced 2,741,310 tons valued at $70,308,009 for their own use in paper-making. A total of 106,028 tons valued at $4,991,471 were made for sale in Canada and 770,007 tons valued at $37,056,392 were made for export.

The 77 mills making paper in 1930 produced 2,926,787 tons of paper valued at $173,626,383 as compared to 3,197,149 tons in 1929 valued at $193,193,022 a decrease of 8.3 per cent in quantity and 10.1 per cent in value.

The total capital invested in the manufacturing part of the industry in 1930 was $714,437,104 as compared to $644,773,806 for 1929, an increase of 11.3 per cent. Only capital invested in operating mills is included in these totals.

The total number of employees on salaries and wages in pulp and paper mills in 1930 was 33,207 and the total payroll was $45,774,976 as compared with 33,584 employees in 1929 with salaries and wages amounting to $50,214,445.

The exports of wood-pulp from Canada during the calendar year 1930 amounted to 760,220 tons valued at $39,059,979 as compared to 830,848 tons in 1929 valued at $43,367,984; during 1930 the imports of wood-pulp were 18,526 tons valued at $826,862.

The exports of paper and paper goods during the calendar year 1930 were valued at $138,440,242 as compared to $154,919,122 in 1929.

Australian Agreement Benefits B. C.

From Vancouver it is announced that British Columbia's lumber industry is benefiting from the new Canadian-Australian trade agreement to a striking degree.

Before the treaty became effective British Columbia was getting the small end of this trade. About 25 per cent was the usual proportion, the remainder going to Washington, Oregon and California. During the months of July and August, however, British Columbia obtained more than 75 per cent of this traffic, thus upsetting the former standing in her own favor.

NATIONAL USS STAINLESS AND HEAT RESISTING STEEL PIPE and TUBES

NATIONAL SEAMLESS

For applications in the Paper Field where effective resistance to corrosion, improved strength at high temperatures and protection from certain acids are important considerations, U S S Chromium-Nickel Alloy Steel Pipe and Tubes effectively answer the question, "what metal is adaptable?" Made by the largest manufacturer of wrought tubular goods in the world, these superior and highly adaptable pipe and tubes are backed by the most exacting standards in manufacturing methods . . . a system of testing and inspection of acknowledged thoroughness, and the judgment of America's leading specialists in tubular requirements.

An additional very important feature not to be overlooked—our expert engineers, metallurgists and laboratories are ready at any time to offer their assistance in helping you solve your problems and upon request, information will be furnished and suggestions made as to application of Stainless and Heat Resisting Alloy Steel Tubes for your purpose.

U S S 18-8 CHROME-NICKEL—U S S 17 CHROMIUM
U S S 12 CHROMIUM

U S S Chromium-Nickel Alloy Steels are produced under the licenses of the Chemical Foundation, Inc., New York; and Fried. Krupp A. G. of Germany

US STEEL

NATIONAL TUBE COMPANY

Frick Building, Pittsburgh, Pa.

QUALITY PRODUCTS — Dependable Service

SUBSIDIARY OF UNITED STATES STEEL CORPORATION

PRINCIPAL SUBSIDIARY MANUFACTURING COMPANIES

American Bridge Company
American Sheet and Tin Plate Company
American Steel and Wire Company
Carnegie Steel Company
Columbia Steel Company
Cyclone Fence Company
Federal Shipbuilding and Dry Dock Company
Illinois Steel Company
Minnesota Steel Company
National Tube Company
Oil Well Supply Company
The Lorain Steel Company
Tennessee Coal, Iron & R. R. Company
Universal Atlas Cement Company

Pacific Coast Distributors—Columbia Steel Company, Russ Building, San Francisco, Calif. *Export Distributors*—United States Steel Products Company, 30 Church Street, New York, N. Y.

Evidence of the continued large business with Australia is to be found in the fact that Fraser River ports alone shipped 7,000,000 feet of lumber to Australia last week, which is more than was shipped during the entire month of August.

These comparative figures show how the lumber trade has swung towards British Columbia during the last two months as compared with the corresponding period in 1930:

	1930 (feet)	1931 (feet)
Washington	12,499,619	1,105,408
Oregon	6,397,236	2,727,213
British Columbia	6,843,767	11,927,046

If British Columbia maintains her present rate of increase for the rest of the year the total exports for 1931 to Australia will more than double those of last year. The extent of the preference in favor of Canada, and which has been responsible for the new business, is $5 a thousand feet.

International Cuts Salaries in Newfoundland

From Newfoundland it is announced that officials and employees of the International Power and Paper Company of Newfoundland have received a 10 per cent cut in salaries. This is stated to be in line with a similar reduction effected throughout all subsidiaries of International Paper and Power as well as in the parent organization itself.

Power from the Tides

A despatch from Ottawa states that joint investigation by United States and Canada of the probable effect upon fisheries of a projected tidal power development scheme across Passamaquoddy Bay between Maine and New Brunswick has been set in motion at last. A program of extensive researches, carried on by a group of associated experts, was mapped and approved by a commission appointed by the two countries.

W. A. Found, Deputy Minister of Fisheries, and Dr. A. G. Huntsman, a member of the Biological Board of Canada, represented Canada on the commission. Henry O'Malley, Federal Commissioner of Fisheries, and O. E. Sette, in charge of the Atlantic Fisheries Investigations for the United States Bureau of Fisheries, acted for the United States.

The power development scheme has been mooted for a number of years, a company having received charters in both United States and Canada. About two years ago, when the company sought an extension of the time in which to commence operations, the Canadian Government demurred until the probable effect on fisheries should be ascertained. This led to the constitution of the commission, the cost of which will be borne by the two countries. Passamaquoddy Bay has been a center of the herring fisheries for many years and objections to the power development have centered around this fact.

The commission, which was in session, has planned an extensive program of researches. These will be carried out by Dr. C. J. Fish, director of the Museum of Science, Buffalo, N. Y.; Dr. H. H. Gran, of the University of Oslo, Norway; Michael Graham, naturalist of the British Ministry of Agriculture and Fisheries, and Dr. E. E. Watson, of Queen's University, Kingston, Ont.

Suit Over Power Rights

In the Superior Court in Montreal R. A. P. Whiteford is bringing action against Canadian Power and Paper Investments, Ltd., and its subsidiary, the Mille Iles Power Company, for the recovery of $625,000 in payment of work allegedly done in connection with power development on Riviere des Milles Iles. Mr. Whiteford, according to his declaration, entered into an agreement with John Stadler, a local engineer, whereby he undertook to secure property and riparian right options, and also federal and provincial authority for power development. He claims he secured the water and power rights and transferred these to Mr. Stadler. He also secured a lease from the Provincial Government. He contends that Mr. Stadler transferred his rights to H. J. Nesbitt, of Nesbitt, Thomson & Co., Ltd., for $315,000. The Canadian Power and Paper Investments, Ltd., the plaintiff avers, is a subsidiary of Nesbitt, Thomson, and this company later organized the Mille Iles Power Company to carry out the proposed development. Mr. Whiteford, according to his declaration, agreeing to transfer all his rights for 25 per cent of the proposed company's common stock and $225,000. This sum was paid, he claims, but 6,250 shares of stock to which he was entitled were not handed to him. His suit is for $625,000 as the value of the shares.

The defence is based on the allegation that the original contract has not been fulfilled and that rights which were to have been secured have not been negotiated.

Washington County as Clay Producer

SANDERSVILLE, Ga., September 26, 1929.—With three companies developing clay in this county, indications are that Washington county will soon rank first in clay production in the United States. Chemists who have made exhaustive tests of clay deposits in this section state that it is of the very highest grade, equal to the imported clays from England.

Engineers have estimated that approximately 40,000 acres of clay bearing lands are located in Washington county. The American Industrial Clay Company, Champion Coated Paper Company, and Edgar Brothers have several hundred acres of land in this county. Two pits are now open and clay is being mined from same. Surveys have shown that kaolin deposits vary in thickness from 5 to 50 feet with overburden varying from six to forty feet.

The land as a whole is well drained, with ample water from flowing streams available. In some sections flowing artesian wells will be available. The deposits are located near good highways and from six to fifteen miles from trunk line railroad. Hydro-electric power is available to all deposits. One of the largest power companies in the south have transmission lines that could be run to any of the deposits.

One advantage the south has is cheap labor. No strikes have ever been experienced in this section. Common labor is now receiving from 10c to 15c per hour, the lowest wage scale in many years.

The clay is being used in the manufacture of paper, rubber, china, fire-brick and scores of other articles.

Hawley Paper Co. Expands

[FROM OUR REGULAR CORRESPONDENT]

PORTLAND, Ore., September 21, 1931.—The Hawley Pulp and Paper company, Oregon City, Ore,. is continuing preparations to expand this paper towel converting operations to pretentious proportions. A new paper towel machine made by the Paper Converting Machine Company of Green Bay, Wis., which has a capacity of 25 cases of towels hourly is being put into operation early this month. W. A. Kelly, formerly with the Northern Paper Mills of Green Bay, is now active manager of the Hawley mill.

WHY NOT END COSTLY BELTING LOSSES?

No central seam – zone of trouble removed
Covered edges – protection from fray – full width power
THOR
GOODYEAR
SILVER DUCK
Heavy covering envelope – unified with ply structure

The Goodyear THOR Belt offers a new performance standard for mill belting

You can end belting losses on beaters, pumps, and other mill machinery by the application of this new Goodyear THOR Transmission Belt. Its scientific construction safeguards THOR against troublesome and costly replacements on heavy-duty drives.

The outstanding feature is the covering envelope which *is also part of the ply structure of the belt.* This stout cover protects the edges—there is no surface seam in the center of the belt to open up; because the envelope completely covers the edges, they are protected from fray—they stay firm and strong, and permit the full width of the belt to grip on the pulley. Strong at the fasteners — staunchly buttressed and cushioned between plies with rubber—this THOR Belt will save money for you on every drive in the mill.

Let the G. T. M. — Goodyear Technical Man — demonstrate the unique advantages of this new Goodyear drive belt. Since introduction early this year it has become standard belting for countless paper mills. Just write to Goodyear, Akron, O., or Los Angeles, Calif., and ask the G. T. M. to call.

THE GREATEST NAME IN RUBBER

GOODYEAR

TRANSMISSION BELTING

Pennsylvania Paper Mills Are More Active

Majority of Keystone State Plants Working on From Four Days to Full Time Schedule—Manufacturers of Book Paper Have Large Volume of Orders on Hand—Various Grades of Writing Paper in Slightly Better Demand

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., October 5, 1931.—While there was a slightly better demand for paper generally throughout the week, the gain in distribution was not of an impressive character, owing to the hand to mouth type of buying which prevailed on lessened scale. Dealers are hopeful of betterment now that the hot spell has subsided and the temperature is more normal for this season. Paper manufacturers activities show the growing demand that materialized in orders throughout the past month and while there is still lacking the seasonal volume of production in the local mills, there is continued improvement. Most mills are on from four days to full time schedule. Fine paper manufacturers who make the popular grades of book papers have the largest volume of orders on hand, as prices are now the lowest of the post war years, and stimulate contract buyers to freer stocking to their advantage.

Kraft was again reduced slightly by a majority of manufacturers who have been promoting sales through concessions in the past fortnight. Demands have not, however, increased among consumers as a result of the reductions and many distributors feel that inroads on values were useless, when local efforts were concentrated on stabilizing the market over the past year through organized association membership in order to bring about betterment in the wrapping paper division and its allied converting industries. Bags have not yet been subjected to the reductions which followed the Spring disturbance in the kraft market, and hold to the levels to which they were advanced in the early summer months.

Fine paper markets on a limited scale are seasonally active, with requirements among printers and other consumers confined to hand to mouth buying, except where large contracts are secured by the mill agents and local paper dealers who cater to volume business. But the majority of such tonnage is secured through those who feature book papers. Fine writing papers are in slightly better demand from both mills and dealers. Announcement stocks and cards, too, are bought in larger volume, as greeting card manufacturers and the engraving trade step up production in the Fall revival of business.

In the keenness of competition there is much haggling over the costs and among some of the local paper distributors values are being cut to stimulate orders. While kraft manufacturers are involved in general reductions, glassine producers in the local mill branch of the trade are also securing tonnage at special prices to gain Fall orders that will be placed in advance of the holiday markets. This situation is most discouraging to the manufacturers who stand their ground for stabilized quotations and who state that business is fairly well maintained despite the depression and shows no need for slaughtering of prices.

Charles McDowell, head of the McDowell Paper Mills, large producers of glassine, states that orders are freer at the present time than they have been since the depression began and if manufacturers will combine efforts towards stabilizing the market the glassine division will find it more profitable and for the general good of the trade in the forward swing of business which will follow return to normal conditions. Volume of production among glassine manufacturers has been the highest of the current year.

The paper stock market, after a spurt of several weeks' buying, has again become sluggish, with little accumulations on hand as a result of recent shipments from wholesalers to mills. There are few of the better grades on hand and common news stocks are in such frequent shipments that little of these can be found, despite the return to quieter times. There has been a slightly better demand for twines and cords but prices are weak and conditions much upset as a result of the tendency of values to sag, both in the raw material market and for the finished products. Another reduction of 3 cents per pound was made in the cost of cotton grades, while no profits are available on the hemp products.

Paper & Cordage Association Meets

Talks on prevailing trade conditions featured the resumption of Fall meetings of the Philadelphia Paper and Cordage Association, held at the Adelphia Hotel in the luncheon session last Friday. There was a representative turn out of dealers who are engaged in distribution and mill representation of paper and twine in large volume. Owing to the fact that this was the initial Fall session only odds and ends of routine business of the association were taken up. Most of the dealers who trade in volume orders stated business was decidedly better, though not normal, but prices were painfully low.

Paper Men Win Golf Honors

Philadelphia paper trade associates linked with the Poor Richard Club and its advertising fraternity, joined in the annual Fall golf tournament of that body held at the Manufacturers Country Club last Wednesday, and won the honors of the day. Paul Craig, who represents the S. D. Warren Company, paper manufacturers, in this territory, captured first prize, the Howard Story Cup, with his net score of 73, considered by other members "on about the same level with Bobby Jones' feats" in view of Craig's handicap of 17. Joe Nash, also scored 73 but owing to a 30 handicap was awarded second place and the Bartley Doyle Cup. Charles Bond, of the Charles Beck Paper Company, was in the runner up classification. Dick Alley and Robert Hesse won the putting contest.

Keasbey & Mattison Co. Elect Officers

Following the merger of the Keasbey & Mattison Company and the Ambler Asbestos Shingle and Sheathing Company sales organizations, the following officers were elected to the Keasbey & Mattison Company, which in the consolidation is the sales body of the merged concerns: Dr. Richard V. Mattison, chairman of the board of directors; A. S. Blagden, president and general manager; W. J. Donahue, vice president; Royal Mattison, vice president; U. G. Funk, treasurer; Joseph Walker, secretary and assistant treasurer; George F. Stone, sales manager; Ralph E. Frey, manager building material sales; John L. Shoemaker, magnesia sales; William Jacobson, manager of fiber sales, and Harry W. Tuman, manager textile sales.

Herman L. Joachim Becomes Paper Mill Consultant

Herman L. Joachim, who until October 1 was associated

with the Quaker City mills of the Container Corporation of America, as mill manager of the Philadelphia Division, and who resigned from the corporation last month, has opened an office in New York City, where he will engage in general consulting work for paper mills. He has been connected with the Container Corporation for the past four years, resigning August 15 from the local management, effective October 1. On that date he left the Philadelphia firm to take possession of his newly acquired temporary office as paper mill consultant, in the building at 280 Madison avenue, New York, occupying Suite 903. These offices may later be changed. He will be consultant in low cost conversion and conduct of mills through systematic process and plant analysis and application of modern management methods.

National Bag & Paper Co. in Bankruptcy

Petition has been filed in the U. S. District Court for an involuntary bankruptcy of the National Bag and Paper Company, which recently took over the old bag making plant of the Central Paper Bag Manufacturing Company at 1732 North Blair street. The creditors are Eugene Dietrich, Sr., $400; and the Pennsylvania Paste Company, $220. The firm earlier in the year took over the bag making equipment and plant of Harris Kardon, trading as the Central Paper Bag Manufacturing Company. Associates are Harry Hand, Joseph Burkhart, and Frank S. Scanlon. Joseph Mullen and Eugene Dietrich, Sr., one of the creditors, are also connected with the firm.

Carborundum Co. Moves

The Eastern District offices of the Carborundum Company, located in this city, have been removed to larger and more modern quarters in the Raeburn Building, 3111 West Allegheny avenue, from the old quarters at 4865 Stenton avenue. The Eastern District offices, of which W. J. Griffith is manager, now occupy the second floor of the Raeburn Building, one of the most modern of Philadelphia manufacturing headquarters, and sales offices of large corporations. In the enlarged quarters heavier stocking is facilitated and the manufacturers of abrasive and sand papers are able to handle all orders with speed owing to the proximity of its new offices and warehouses to the Reading Railroad, which has a siding running directly to the building's shipping platform. The firm, which has headquarters and plant at Niagara Falls, supplies the Eastern State through the local branch distributing from Trenton, N. J., southward, along the Atlantic Seaboard to South Carolina, its products of Carborundum brand flint papers, garnet papers, waterproof papers, tympan, coated abrasive paper discs and allied lines. It is one of the largest manufacturers of these in the world and owns its own mines, quarries and pits for its abrasive supplies.

Pulpwood Operations Fairly Extensive

Between 60,000 and 90,000 cords of pulpwood will be purchased in the Thunder Bay district of Ontario next winter for the operations of the Great Lakes paper mill next year, it was announced recently by W. F. Shafer, manager of the company. Mr. Shafer said that the National Trust Company, of Toronto, acting as receiver for the Great Lakes Paper Company, is now negotiating with various wood contractors in Fort Williams and Port Arthur for supplies of wood. The cut, which will be made next winter for the mills, Mr. Shafer said, would be a fair average one. It is not quite so large as that made in the winters of 1929 and 1930 but he pointed out that considerable wood was cut for storage in these two years and that the harvest next winter would be of about average proportions.

In the meantime, word comes from Quebec that many of the pulp and paper concerns are applying for wood cutting permits. Among these are Price Bros. & Co. and the Donnacona Paper Company, the former to cut around the basin of Rat River, and the latter on the Jacques Cartier River. Permits asked for by other companies are for cuts on the Harrican and Abitibi Rivers. The Price company will cut 40,000,000 feet, board measure, and the Donnacona company 8,200,000. Permits are given for $1.50 per thousand feet, board measure. Some weeks ago the various representatives of the pulp, paper and lumber interests had an interview with Premier Taschereau with respect to increasing wood cutting in the province with a view to giving work to unemployed.

From New Brunswick comes word that the pulp peeling season has ended and that it has been a satisfactory one. While the summer activity in pulpwood was lighter than in former years, conditions were remarkably good for peeling. Most of the wood cut on Crown lands was shipped to pulp and paper mills in Maine. Operations for the pulp and paper plants at Dalhousie and Bathurst have been carried on in the northern counties and the International Paper Company will conduct winter pulpwood operations along the Restigouche, but this will be about the only late activity this year.

Greater Art in Paper Napkins

The consuming public is rapidly becoming "paper minded" and approves of the sanitary features, as well as the low cost features of paper substitutes for the older cotton or linen laundered napkin or serviette, and there is an insistent demand that the paper substitute be not only soft and pliable and contain absorbing properties, but that it must have an attractive appearance as well.

No manufacturer of paper goods to-day can afford to lose sight of the appeal a truly attractive piece of merchandise makes when offered for sale. The introduction of real art into the manufacturing of the paper napkin or serviette, together with the low unit costs of goods, as is now possible with the use of Waldron equipment, accounts for the present rapidly increasing demand by the public for the paper product.

The John Waldron Corporation of New Brunswick, N. J. who for over a century have been builders of converting machinery, have developed an advanced line of folding, embossing and printing machines for the production of decorative paper napkins or serviettes. These new "Centennial" model machines produce decorative effects in either printing, embossing or a combination of both; provide a clean, shear cut accurately registered to the pattern and quarter fold the napkin for greater attractiveness. All these operations are performed in sequence and these modern machines count the unit quantities of finished goods. 500 napkins or serviettes are produced each minute without undue strain or vibration.

Waldron "Centennial" model machines embody every modern mechanical improvement. They represent the finest in machine construction.

The John Waldron Corporation has prepared a very attractive and interesting catalog which completely describes and fully illustrates these new and popular models. Every executive in the converting field should become familiar with these modern types of processing equipment. Paper mill executives are realizing a profitable market for napkins or serviettes which they can easily, economically and efficiently produce with the new Waldron combination machine. A copy of this catalog will be gladly sent without obligation.

Demand for Paper Improves Slightly in Boston

More Interest Develops In Book Paper, Writing Paper and Announcements — Coarse Paper Market Exhibits Stronger Undertone—Box Board Situation Fairly Satisfactory—Paper Stock Generally Rather Dull, With Notable Exceptions

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., October 5, 1931.—During the last week of September and the early days of October a slight improvement developed in the wholesale paper market in Boston and New England. On the whole there has been a moderate volume of inquiries and orders. The demand for announcements, writings and book papers is sustained, and in some cases there is possibly more interest. There are apparently more orders in the offing for printers, in addition to those already placed. Some of them have given specifications on tentative orders, but say that they feel customers are holding off and buying conservatively. A dealer noted an inquiry which he recently received, but when the order on which the inquiry was based was received, the amount mentioned in the inquiry was cut in half.

Commenting on conditions in the fine paper market, with the improvement in the last week of the last month, a fine paper dealer says with emphasis that "notwithstanding that, some of the mills and the merchants seem to be crazier than ever in doing foolish and unnecessary things which will retard business rather than improve it at just the time when a slight improvement seems to be in sight. Many quotations made during the past week are ridiculous and absolutely unnecessary."

While wrapping paper has shown a little more liveliness, the improvement in September did not develop to the degree expected. An average amount of business is being transacted in view of conditions. No. 2 kraft is tending to soften somewhat.

Hot spells which have come at intervals during September have brought a further demand for specialties, such as drinking cups, tissue products, and soda fountain supplies. Seasonal specialties, such as oiled wrappers for apples, are moving well.

The box board market remains fair, with values at the same levels. The call for boards for shoe boxes is possibly somewhat less, with a quieter tone in the retail footwear trade. This falling off is undoubtedly offset by a greater interest in material for fancy boxes.

The paper stock market is generally rather dull, although a few commodities which have revived of late are the exception. There has been a little more inquiry for box board chips, with actual orders developing, so that the range of prices has risen from .16 to .20 to .20 to .25, f.o.b. Boston. Old newspapers are fairly active, with values continuing at .30 to .40.

New England Paper Merchants Meet

A luncheon meeting of the White Paper Division of the New England Paper Merchants Association was held at Rich's Grill, Federal street, Thursday, October 1, the first of which will be a series of weekly constructive meetings held at the same place each Thursday. Those who were present were very much disappointed that those who were missing were not there, because some of the number attending had some interesting and pertinent questions they intended to ask the absent ones. A table is now reserved each Thursday at 12.30 at the Georgian, corner of High and Federal streets, for wrapping paper merchants.

News of the Trade

James L. Ham, of Arthur E. Ham & Sons, expects to be present at the annual meeting of the Monoplane Bond agents as guest of the P. H. Glatfelter Company, Spring Grove, Pa., October 6 and 7. Mr. Ham, with Charles H. Barr, of Holyoke, and W. E. Perry, of the Plymouth Paper Company, expects to joint a large delegation of New York merchants who leave New York Monday night on a special car on the Manhattan Limited, which will be met at Lancaster, Pa., later in the evening by representatives of the Glatfelter Company.

Albert E. Hahn, assistant sales manager for Stimpson & Co. is the proud father of a fine boy, born the last week in September.

Bruynhall, Inc., Springfield, Mass., decorative papers, cards, etc., has been incorporated with a capitalization of $50,000. There are 500 shares, $100 each. The president is Gertrude V. Brulin; treasurer, Alice L. Halligan, 49 Northampton avenue, Springfield, and the third incorporator is Mary H. Bruyan.

The Harry M. Cranmer Company, Inc., Boston, paper and paper products, has been incorporated with a capitalization of $10,000. There are 100 shares, $100 each. The president is Harry M. Cranmer; vice-president, Martin V. Dunning; treasurer, Harry M. Cranmer, 12 Brook street, Wellesley, Mass.

The Three Line Counter Company, Newburyport, one of the subsidiary plants of the Spaulding Fibre Company, North Rochester, N. H., is soon to close its doors, according to an announcement made by the Spaulding Company. It is planned to absorb the plant with the parent plant at Rochester.

Correction

It was stated in this column on September 24 that a new line of the American Writing Paper Company's Revenue Bond, made in white only, is selling at 16½ cents in units between the low-priced Sulphite Bond and their Acceptance grade.

We are informed by the American Writing Paper Company that the unit, or 1,000 sheet, price of Revenue Bond is 18½ cents per pound. The 16½ cents per pound price is for cases.

Tendered Farewell Dinner

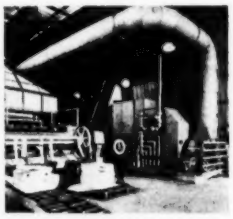
[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., October 5, 1931.—A farewell dinner was given recently at the Keenan Hotel in Fort Wayne, Ind., honoring J. J. Brossard, assistant general manager of the Fort Wayne Corrugated Paper Company since 1922, and who has been associated with the company for 21 years. Mr. Brossard recently resigned to become vice-president in charge of operations of the Container Corporation of America and has arranged to go to Chicago in the near future.

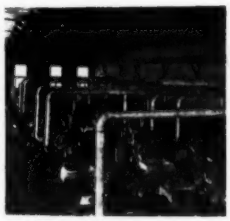
Officials and department heads who attended the dinner were: Henry C. Paul, Henry Bowerfind, F. P. Koester, H. M. Treen, J. W. Rastetter, George Stevens, William Waterfield, Charles Kramer, Jack Curtin, A. F. Stahlhut, William Archer, James Stinson, O. O. Nickerson, H. V. Klingel, V. Kergeries and Fred Christ.

3 ways in which economical mills will reduce operating costs this winter

View of Ross-Wagner Recovery Furnace.



The Ross Vapor Absorption System.



Ross Grinder Exhaust System.

1 In the recovery of chemicals in the sulphate and soda processes, the Ross-Wagner Furnace will effect savings in steam cost and maintenance expense; reduce carrying charges by eliminating several items of equipment heretofore required; and increase output of improved quality pulp.

2 By utilizing a Ross Vapor Absorption System to not only increase evaporation and drying efficiency at lower temperatures in the dryers but to also distribute hot, dry, clean air to the wet end of the machine room without requiring excessive quantity of steam for heating purposes.

3 By increasing working efficiency in the grinder room and avoiding constant expense for damage and repairs to equipment;—economies secured by operation of the Ross Grinder Exhaust System that eliminates dampness, drip, and fog by exhausting the vapor at its source.

❖ ❖ ❖

There is Ross apparatus designed to reduce operating and production expense in nearly every department of the mill. We welcome inquiries relative to specific heating and ventilating problems.

J. O. ROSS ENGINEERING CORPORATION

201 North Wells Street CHICAGO

Main Office—122 E. 42nd Street NEW YORK

311 Lewis Building PORTLAND, ORE.

ROSS ENGINEERING OF CANADA, LIMITED
NEW BIRKS BLDG., MONTREAL

ROSS SYSTEMS
HEATING—VENTILATING—DRYING

Dollar Discount May Aid Canadian Paper Mills

Should Spread Between U. S. and Canadian Dollar Continue, Dominion Manufacturers Would Gain From $3 to $5 Per Ton On Export Sales of News Print Paper — Corresponding Advantages Would Accrue to Othe: Lines of Paper and Pulp

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., October 4, 1931.—Stock market observers, in estimating the possible effects of a continuation of the existing discount on the Canadian dollar, point to the fact that such a development would not be an unmixed evil. Many Canadian companies which have built up a substantial export market for their production, especially in the United States, and which are not obliged to go outside the Dominion for their raw materials, would benefit to an important extent should the spread between the United States and Canadian dollar remain for any extended period.

An outstanding example is the pulp and paper industry, which is in need of some constructive development, with earning power curtailed and the physical condition of some of the operators being impaired as the result of the adverse operating conditions which have prevailed now in the industry for nearly three years. Production of pulp and paper in 1930 was valued at $177,000,000 and, of this total, almost 90 per cent was exported to the United States. With prevailing prices at a level which provides little in the way of net profit for the mills, an additional 7 to 10 per cent on the value of the huge export sales would mean much to the Canadian operators, representing as it would, the equivalent of $3 to $5 a ton on news print—the most important item—and corresponding advantages in other lines of paper and pulp.

Of quite as material importance, it is pointed out, would be the possibilities of substantially increased business accruing to Canadian mills next year when contracts for 1932 come up for consideration. In 1930 there was production of 1,282,000 tons of news print from United States mills, and it is obvious that the spread between the United States and Canadian currencies would give the Canadian mills a very decided advantage in bidding for new contracts, permitting them to shave their prices by two or three dollars a ton in order to obtain the business. With production running away below capacity, the benefits in operating results to be derived from any material addition to orders on hand would be very considerable.

It is pointed out that the offset in necessary purchases from the United States by Canadian operators would be negligible. The only big item used by pulp and paper operators which must be obtained from the United States is sulphur. Last year sulphur requirements for the whole industry in Canada amounted to 175,000 tons, valued at around $4,250,000. When compared with exports to the United States, valued at over $150,000,000, this would be a minor consideration.

Abides By Contract with Abitibi

Ontario Power Service Corporation, a subsidiary of Abitibi Power and Paper Company, which will complete according to schedule its $23,000,000 electrical development at Abitibi Canyon early in October, 1932, may not have an immediate outlet for its total of 275,000 h.p. which will then be available. Abitibi Power will take 175,000 h.p. mainly to convert water into steam in the electrical furnaces at Iroquois Falls, but much anxiety has been felt of late by investment bankers who heard that negotiations had been reopened with the object of lessening the amount of power which the Ontario Hydro-Electric Power Commission will be obliged to take from the new development. It is stated, however, by men in authority at Queen's Park, that there should be no fear that the Ontario commission will try to recede from its agreement in any degree. Ontario Hydro has bought 85,000 h.p., rising in a few years to 100,000 h.p. The price has never been made public but it is stated to be around $13 per h.p.

Six-Hour Day for Paper Makers

The fourth paper making machine at the mill of the Abitibi Power and Paper Company at Sault Ste. Marie, Ont., is again operating, which means that the plant is now in full operation, in so far as the paper machines go. The board mill will resume operations on October 1. The cutter for flat paper has been brought from Iroquois Falls mill, to which it was shipped last December. Twelve men on three shifts are employed on it. The Paper Makers Local 133 has decided to accede to the mill's request for a six-hour day. The pulp, sulphite and paper mill workers have not yet agreed to this. The six-hour day will add about 150 men to the payroll.

Pine Falls Mill to Close

The head office of the Abitibi Power and Paper Company at Toronto has sent out notices that the Manitoba Paper Companys mill at Pine Falls will close down temporarily as soon as the present supply of pulpwood on hand has been exhausted. It is estimated that this will not occur until late next spring. The Pine Falls mill has been operating full time, while a number of other mills operated by the company closed down at intervals. It is the desire of the company's officials to use the wood accumulated at mills which have colsed down, before it deteriorates.

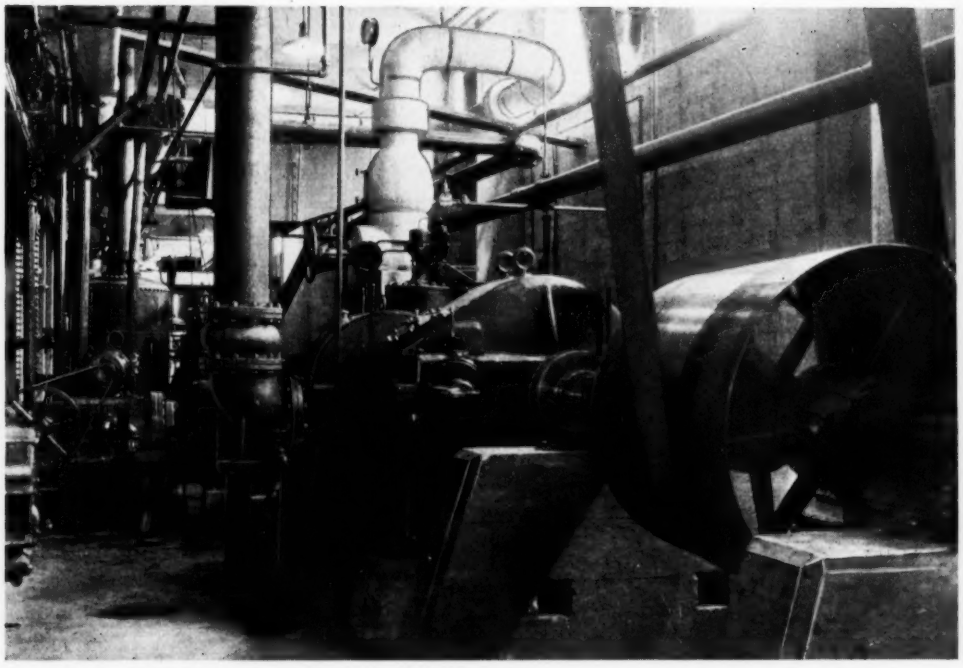
Notes and Jottings of the Trade

A. P. Costigane, secretary-engineer of the Ontario Pulp and Paper Makers' Safety Association, has returned to Toronto after a visit of inspection to a number of pulp and paper mills in Eastern Ontario. Among the plants visited were the Hinde & Dauch mill at Trenton; the Cornwall mill of the Howard Smith Paper Mills, and the Hawkesbury mill of the International Paper Company. "Taken as a whole the physical condition of most of the mills are as good as they have been for some years," said Mr. Costigane. "The accident record so far this year shows only two fatal accidents in the Ontario pulp and paper mills, while with respect to minor accidents lost time shows a reasonable reduction. Men who are actively engaged in this phase of the industry are hopeful that the year will end without any further fatal accidents."

Foundation work is now well under way by contractors for the erection for a $125,000 warehouse and offices for the Buntin Reid Company, at 117-125 Peter street, Toronto. The building is to be three stories high and semi-basement, 80 by 160 feet. The Buntin Reid Company are one of the oldest wholesale paper firms in Toronto.

At the last monthly meeting and dinner of the Toronto Club of Printing House Craftsmen a number of the crafts-

TERRY
Paper Machine Drive



One of two 600 H. P. Terry Paper Machine Drives installed in a recently completed Southern Paper Mill.

YOU CAN OBTAIN ANY DESIRED SPEED THROUGHOUT A 10 to 1 RANGE

No matter whether you require high paper speeds to secure greater production or low speeds for heavy stock, the Terry drive will give them. All speed changes are made easily and smoothly — not in steps.

Why not investigate the possibilities of Terry turbine paper machine drive. Any of our District offices will be glad to give you complete information on a drive to meet your requirements. No obligation.

The TERRY STEAM TURBINE COMPANY
TERRY SQUARE, HARTFORD, CONN.
Steam Turbines - Gears - Shaft Couplings

T-1087

men reported on their recent trip to the International convention at St. Louis. The Toronto dinner was attended by a number of the paper salesmen.

The Toronto office of the Howard Smith Paper Mills has sent out copies of "Selling with Sales Letters," the third of a series of four booklets which are being put out for Canadian printers. A fourth booklet is to be issued this autumn.

Fred W. Halls Paper Company, Toronto, have mailed a very attractive broadside under the title "The Message Between the Lines" stressing the value of high class business stationery. By an ingenious arrangement of type the business man is asked to read the black typewriting to find out what he can say about himself, while between the black lines, in white, the business man can find out what good paper can "say about you."

Y. Aoyama and R. Okawa, of Tokyo, chief engineer and general superintendent of the Fuju Paper Mills, Ltd., Tokyo, have arrived in Canada and are now on a business trip, during which they will visit many pulp and paper mills both in Canada and the United States.

J. J. Herb, a former Ontario paper manufacturer, was re-elected president and general manager of the Westminster Paper Company, Ltd., New Westminster, B. C., at the annual meeting of the company. The plant of the company is operating steadily and the paper machine and printing presses are running on a 24-hour-a-day basis. One or two other departments are also running two shifts, and all other employees are working on regular day shifts.

J. H. Hooke, vice-president of the Whyte-Hooke Paper Company, has returned from a business trip to Montreal.

Norman E. Wainwright, head of the Don Valley Paper Mills, Toronto, has returned from a business trip to Montreal.

John Traquair, chemist in charge of research work, Mead organization, Chillicothe, Ohio, has been touring Eastern Canada and visited a number of the Ontario mills *en route*.

A guest of C. V. Syrett, of the C. V. Syrett Paper Company, Toronto, recently, was the Rev. J. B. L. Jellicoe, the well known social reformer of London, England, and cousin of Admiral Jellicoe, who toured Canada in September.

A striking piece of direct mail advertising has just been put out by Provincial Paper, Ltd., Toronto, with the object of exemplifying the suitability of its Oxford Super for giving results in illustrations of rich carpets, whether in nature's colors or in the neutral, flat white tone values.

Fire, which broke out as the result of spontaneous combustion in the plant of the Hinde & Dauch Paper Company, manufacturers of straw board for corrugating purposes, at Trenton, Ont., wrought about $12,000 damage. The loss was covered by insurance.

Orville H. Moore, widely known in Canadian paper circles as the former general manager of Hinde & Dauch Paper Company of Canada, Ltd., Toronto, is bringing action against the company for $65,000 damages for alleged breach of contract resulting from wrongful dismissal.

A number of Toronto wholesale paper dealers attended the dinner of the Toronto Typothetae at the Royal York Hotel, when G. R. T. Porte, well known printer and publisher, of Salt Lake City, addressed the gathering on "The Golden Age of Printing."

A number of paper men from Toronto attended the funeral of the late H. Freed, of Dominion Containers, who died at his residence in Montreal.

H. Breckenridge, who for some years has been treasurer of Dominion Boxboards, Ltd., has retired on account of ill health.

Following a simple ceremony in Mt. Pleasant Cemetery, Toronto, the ashes of Mr. and Mrs. Charles Riordon were placed in the family vault. Mr. Riordon, who with his brother founded the Riordon Pulp and Paper Company, was for some years president of the Mail Printing Company in Toronto, his death in Montreal having taken place a few weeks ago. His wife predeceased him about three years ago. Both bodies had been cremated and urns containing their ashes were brought to Toronto from Montreal.

H. W. Koch 50 Years With Blair Co.

Harry W. Koch, president of the J. C. Blair company, Huntingdon, Pa., August 21 observed the golden anniversary of his service with that company and is receiving the congratulations of his friends and associates upon this unusual record.

Mr. Koch entered the employ of Mr. J. C. Blair on a Saturday morning, August 21, 1881, when Mr. Blair was conducting a stationery and tablet business in the frame building that still stands at 420 Penn street. He laughingly recalled this morning to a reporter of the Daily News that his first salary was fifty cents a day. His job was to punch the copper carpet tacks through the top of the tablet to act as a binder. Shortly after he secured this job, Mr. Blair moved his place of business to the old Presbyterian church at the corner of Sixth and Penn streets, upon which site have been built the additional buildings to the company during the succeeding years.

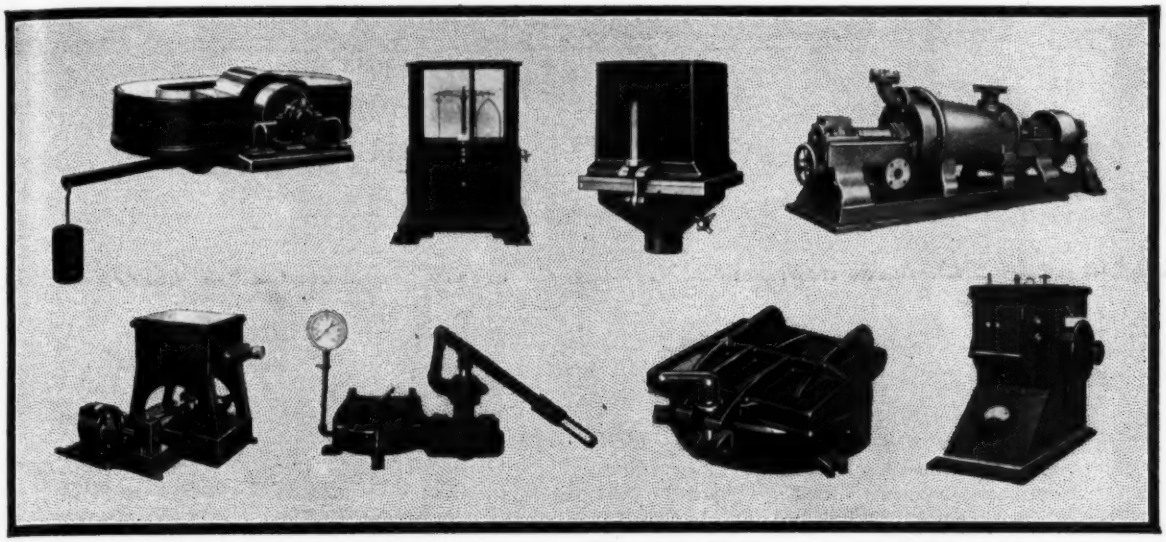
Mr. Koch was some time later promoted to the shipping department as packer and became the shipping clerk. Upon the death of Mr. Blair, June 23, 1897, Elmer B. Africa, who had been vice-president of the concern, became the president and Mr. Koch was promoted to the vice-presidency. He occupied this position until February 23, 1919, when he became president at Mr. Africa's death.

During his fifty years with the Blair company, Mr. Koch has been instrumental in the growth of a small business into its present position in the tablet industry. He has watched the growth of an idea, the creation of a demand for a product and the steady increase in sales and business. He has watched the perfection of processes of manufacture and installation of modern machinery and equipment. New buildings have been added to the plant and more recently the company has been merged into the giant corporation of which it is now a unit.

On the day of the anniversary, letters and telegrams and flowers came to Mr. Koch congratulating him upon the notable achievement, not only of having served one company for fifty years, but of having climbed the ladder of success to the head of the business whose employ he entered fifty years ago.

Carthage Mill Shows Gain

CARTHAGE, N. Y., September 30, 1931—The net income of the Crown Zellerbach Corporation, operating plants here, for the quarterly period ending on July 31 was $1,276,559 after all charges, taxes, depreciation and depletion but before minority interest in subsidiaries which is a gain of $91,473 or about 7 per cent over the similar period of last year. The income of the corresponding period of last year was $1,185,086. After the minority interest of $425,769 the consolidated net income was equal to about $3.40 a share on 250,601 combined series preference shares against $3.03 a share on the same number after a minority interest of $426,242 for the same period of last year. The gross income for the period was $3,060,008 against $2,856,876 for last year.



DEVELOP New Products

IMPROVE Old Products

VALLEY
Lab. Equipment:

Beater
Sheet Mould
Hydraulic Press
Hot Plate
Size Tester
Drying Oven
Flat Screen
Couch Roll
Jordan

THE EASIEST money in the paper industry today is being made from new products. The same is true of products which have been improved and costs reduced.

That is why your research laboratory is such an important department.

No mill can afford to wait and follow the courses blazed by other mills. Every mill must solve its own problems and carry on its own consistent program of self-improvement. Progress in the paper industry demands scientific control and creative development.

We have recently issued a Bulletin which intimately discusses just what the scope of a modern paper laboratory should be . . . what equipment is necessary . . . and what functions it should perform. It also contains a complete description of Valley Laboratory Equipment.

A copy of this Bulletin, together with answers to any inquiries you have to make, will be sent to you upon request. Address Valley Iron Works Co., Appleton, Wis.

VALLEY
Equipment for Paper and Pulp Mills

Plant: Appleton, Wisconsin
New York Office: 350 Madison Ave.
Canadian Representatives: Pulp & Paper Mill Accessories, Ltd., Montreal, Canada

CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Finances and Operation of Paper Mills

Construction News

Port Angeles, Wash.—The Olympic Forest Products Company, San Francisco, Cal., has completed plans for a new plant unit at Port Angeles, for storage and distributing service. It will be one-story, 66 x 240 feet, reported to cost about $40,000, with equipment. General contract has been let to the Austin Company, Dexter-Horton Building, Seattle, Wash.

Brooklyn, N. Y.—The Muller Paper Goods Company, 2350 Linden street, Ridgewood, Brooklyn, has plans under way for a new three-story addition to its plant, to be 100 x 100 feet, portion of structure to be used for office purposes and remainder for manufacturing service. It is estimated to cost over $80,000, with equipment. H. Brucker, 2424 Myrtle avenue, Brooklyn, is architect.

Chester, Pa.—The Scott Paper Company is completing an expansion and improvement program at its mill, including the installation of a high-speed paper-making machine and auxiliary equipment, providing for considerable increase in output. It is expected to develop the new unit to maximum capacity at an early date. The Stone & Webster Engineering Corporation, 90 Broad street, New York, is engineer.

Kaukauna, Wis.—The Thilmany Pulp and Paper Company, Kaukauna, is reported planning a new addition to mill, consisting of a one and two-story structure for storage and distributing service, with portion for office service. Estimated cost has not been announced. M. A. Wertheimer is president.

New Orleans, La.—Lengsfield Brothers, Inc., 1101 Tehoupitoulas street, manufacturer of paper boxes and containers, has plans under way for an expansion and improvement program for large increase in present output. Work will include construction of a top story addition to present factory, providing about 25,000 square feet additional floor space, with installation of considerable additional machinery and equipment. Work is estimated to cost over $100,000 and will be pushed to early completion. B. F. Lengsfield is president.

Newark, N. J.—In connection with research operations, Celluloid Corporation, 290 Ferry street, is said to be perfecting a new transparent, moisture-proof wrapping material, resembling paper, and proposes to develop the product for regular commercial production in the future.

Vincennes, Ind.—The Central Fibre Products Company, Vincennes, will proceed with extensions and improvements in local plant for increase in capacity, and expects to complete the program at an early date. It is reported to cost about $30,000, including additions in power house and installation of new boiler and accessories. James L. Carey, 208 North Laramie avenue, Chicago, Ill., is engineer for the work. W. A. Viets is manager.

New York, N. Y.—The Reasonable Paper Box Company, 47 Greene street, paper boxes and containers, has leased space in the building at 62-64 Greene street, and will remove to that location.

Atlanta, Ga.—Montag Brothers, Inc., 182 Marietta street, N. W., manufacturer of paper goods, stationery, commercial stocks, etc., has plans under way for a new building on Magnolia street, N. W., consisting of a one-story structure, 71 x 110 feet, brick and steel type, to be used for storage and distributing service. It is reported to cost over $25,000, with equipment. C. O. Whitaker, Bona-Allen Building, Atlanta, is architect and engineer. Company will build by day labor, with F. H. Foster is charge.

Harrisburg, Pa.—The Harrisburg Paper Box Company, Harrisburg, manufacturer of folding and other paper boxes and containers, is running at close to normal capacity, giving employment to large working quota and expects to hold to present schedule for an indefinite period.

Minneapolis, Minn.—The B. F. Nelson Manufacturing Company, 401 Northeast Main street, manufacturer of roofing papers, paper containers, etc., has approved plans for a new one-story building at 444-8 Marshall street, Northeast, awarding general contract to the E. M. Ganley Company, 2920 Oakland avenue. The structure will be about 30 x 75 ft., and will be used for storage and distributing purposes. F. B. McNally is vice-president and general manager.

Appleton, Wis.—The Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis., has had plans approved by the State for the construction of a new one-story unit for bleaching service at its mill at Appleton. It is understood that work will be placed under way at an early date. Estimates of cost have not been announced.

Chelsea, Mass.—The Russell Paper Can Company, Gerrish avenue, is arranging to develop capacity operations at an early date, following installation of equipment in the local plant of the Russell Box Company, which has been under way for several weeks past. The company will specialize in paper cans, as well as boxes and other paper containers. Harlow M. Russell is head.

Chicago, Ill.—The Vortex Cup Company, 421 North Western avenue, Manufacturer of sanitary paper cups, etc., is operating at close to normal production schedule, giving employment to large working force. It is expected to hold to current output for an indefinite period.

Nutley, N. J.—George LaMonte & Son, Kingsland road, manufacturer of safety papers, has construction in progress on new plant buildings, recently referred to in these columns, including a second story addition to present one-story structure; two-story wing extension, 45 x 60 feet; and one-story building, 30 x 100 feet. The different buildings will be pushed to early completion and are reported to cost over $75,000, with equipment. Jardine,

DEXTER
BLEACHED MITSCHERLICH
SULPHITE

Made Under Original Mitscherlich Process

A Quality Pulp for Special Purposes

Inquiries Solicited

DEXTER SULPHITE PULP & PAPER CO.

DEXTER, NEW YORK

Murdock & Wright, 347 Madison avenue, New York, are architects.

Cogdell, Ga.—In connection with the proposed development of the use of Georgia slash pine for paper pulp service, Alexander K. Sessoms, Cogdell, has cut and dried a quantity of such timber, to be used at once for pulp manufacture at the National Forest Laboratory, Madison, Wis., and converted into paper for immediate semi-commercial use for the Georgia State Chamber of Commerce, Atlanta. As recently reported in these columns, the Georgia Legislature has authorized a fund for a new experimental plant for pulp production from Georgia pine. The Georgia Forestry Association, Atlanta, is interested in the project, which is expected to be ready for service early in 1932. A total appropriation of $70,000 is available.

Niagara Falls, N. Y.—Following recent purchase of the Hinds Paper Box Company, 832 Ashland avenue, Niagara Falls, by the Warder Paper Box Corporation, Dunkirk, N. Y., the last noted company is now concentrating production at the Niagara Falls factory, where increased manufacturing facilities have been provided.

Hackensack, N. J.—The C. R. Whiting Company, manufacturer of fancy paper stocks, etc., formerly of Newark, N. J., is operating in a portion of the former local mill of the Campbell Wall Paper Company, forming part of what is now known as the Harper Terminal, Inc. The Whiting company has secured about 25,000 square feet of floor space and will develop increased output at the new location.

New Companies, Etc.

Boston, Mass.—The Harry M. Cranmer Company, Inc., has been incorporated with a capital of $10,000, to manufacture and deal in paper products. Harry M. Cranmer, 12 Brook street, Wellesley, Mass., is president and treasurer; Martin V. Dunning is vice-president.

Philadelphia, Pa.—Kayser & Allman, Inc., has been incorporated with a capital of 1,000 shares of stock, no par value, to manufacture and deal in wall paper products. The incorporators are Henry H., Justin P., and Charles K. Allman, 1522 Chestnut street, Philadelphia. Last noted has been elected treasurer and will be company representative.

Springfield, Mass.—Bruynhall, Inc., has been incorporated with a capital of $50,000 to manufacture and deal in decorative paper stocks, card stocks, etc. G. V. Bruyn is president; and Alice L. Halligan, 49 Northampton street, Springfield, treasurer and representative.

New York, N. Y.—The Acme Folding Box Company has been incorporated with a capital of $50,000, to manufacture folding and other paper boxes and containers. The company is represented by Weberman & Goldstein, 401 Broadway, New York, attorneys.

New York, N. Y.—The Hano Paper Exports Corporation has been chartered with a capital of $10,000, to deal in paper products of various kinds. The company is represented by Garfield & Seligson, 285 Madison avenue, New York, attorneys.

Brooklyn, N. Y.—Consolidated Paper Company, Inc., has been incorporated with capital of $25,000, to manufacture and deal in paper bags and containers. The incorporators are Louis Ginsberg, David Brooks and Samuel Eisenberg. Company is represented by Jacob Bookshin, 50 Court street, Brooklyn, attorney.

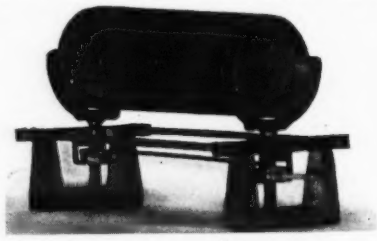
Manchester, Conn.—Rogers Paper Manufacturing Company, Inc., Manchester, has filed notice of company dissolution under State laws.

Brooklyn, N. Y.—Server Paper Corporation has been incorporated with capital of $100,000, to manufacture and deal in paper specialties. The incorporators are A. and George S. Jounakos, and Anthony Xanthos, 520 West 183rd street, New York. Company is represented by Harry E. Lipsig, 225 Broadway, New York, attorney.

Detroit, Mich.—Malden Paper Company, 1362 Adelaide street, Detroit, has been incorporated with capital of $15,000, to manufacture and deal in paper specialties. The incorporators are Thomas and R. Nanes, 3746 Tuxedo avenue, Detroit.

New Open-End Dandy Roll

A new Open-End Dandy Roll has recently been developed by the C. H. Smith Corporation, of West Springfield, Mass., which has many new features, including a new rigid, removable cover invented and patented by Walter G. Trotman. This new Open-End Dandy Roll can be used on any speed machine from the slowest running to the fastest, and has two shower pipes placed inside, one for steam and one for water, thus keeping the cover clean



OPEN-END DANDY ROLL

and preventing corrosion on the rods and winding wire. The end of the Dandy is grooved and runs on ball bearing wheels on a specially constructed carriage. This carriage has a quick lifting device which permits the wire to be raised by one individual, merely turning a small lever, eliminating necessity of operation by two individuals.

With the new rigid removable Dandy Roll Cover, one frame or mandrel can now be used indefinitely with different covers, which are easy to apply and remove. The covers are supplied in sections, such as 2-34s across the machine or 3-22s. The first size frame or mandrel will carry any size of rigid cover from 20½ inches to 25½ inches in circumference. The next size will carry up to 33½ inches in circumference. The outstanding feature of the Dandy Roll construction is that the inside of the roll can be easily kept clean by removing the rigid cover and spraying the inside with water.

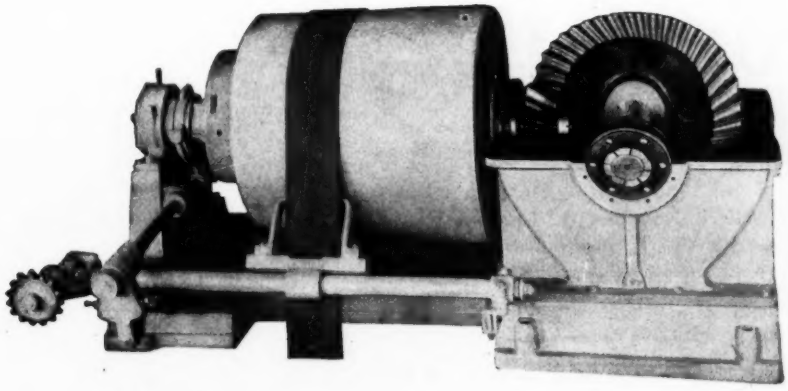
Paper Officials Sued

[FROM OUR REGULAR CORRESPONDENT]

PORTLAND, Ore., September 26, 1931.—Suit to recover $50,000 on two surety bonds carried by John F. Telander and Newton Charles Weaver, ex-president and ex-secretary respectively of the Willapa Pulp and Paper company, was filed in behalf of the paper company in superior court in Seattle September 22, against the American Employers' Insurance company of Boston.

The complaint charges that the two officials drew $100,000 of the company's money from a Portland bank in 1930 and disbursed it and that they abstracted an unknown quantity of bonds. The suit was filed by Attorney Thomas MacMahin of Tacoma.

The complaint also set forth that $3,000 belonging to the paper company which had been received from the Star Iron and Steel works of Tacoma, had also been misapplied.



"M & W" SPIRAL BEVEL GEAR

DRIVE STAND

Patent No. 1,567,955. Inclosed Type

BUILT in different sizes to suit power and speed requirements of paper machines . . . Gives accurate regulation of the draws . . . Operates on separate machine units without vibrations or noises . . . No backlash . . . No gear guards required . . . Materially reduces the breaking of the wet paper on wet end of machine, and snapping of paper in the dry part of machine, thereby increasing production . . . Saves power . . . Low upkeep . . . Equipped with a Moore & White High Speed Friction Clutch, with brass and iron discs, which operates quietly, and is easily adjusted from one point . . . Operates from front side of machine to suit mill conditions . . . All bearings are latest type anti-friction (ball or roller bearings).

THE MOORE & WHITE CO.

Paper Mill Machinery

Office and Works, North Philadelphia Station, P. R. R.

PHILADELPHIA, PA.

PAPER TRADE JOURNAL

ESTABLISHED 1872

Published at 34 North Crystal St., East Stroudsburg, Pa. Executive and Editorial Offices, 10 East 39th St., New York, N. Y.

Henry J. Berger
Editor

Ronald G. Macdonald
Editor Technical Section

Herbert J. Laughton
Associate Editor

Thomas J. Burke, C. A.
Editor Cost Section

Reginald Trautschold, M. E.,
Power Engineering Consultant

Lynne M. Lamm, *Washington Correspondent*

Price. Per Copy, 10 Cents — United States, Per Annum, $4.00
Canada and Foreign Countries in Postal Union, $6.00

Member Audit Bureau of Circulations

Vol. XCIII New York, October 8, 1931 No. 15

NEW BOOK BINDING

Since the beginning of this century there has been little change in the style of binding for novels and other commercial edition books. For many years the two prominent parts of a book have been (a) the cover, made of hard rolled binders' board over which cloth has been glued and then lettering or a decorative design stamped on in ink, foil or gold; (b) the jacket, on which is usually printed an illustration in one or more colors or a "blurb" about the book, or both.

The chief objection to the jacket has always been that it tears and soils quickly and easily. Usually there are no clean jackets to replace the old ones. Book publishers in general have been cognizant of this objectionable feature and for several years have been striving to remedy it.

Among those who have been endeavoring to develop a new style of bookbinding, which would have few or none of the disadvantages of the old, is A. C. McClurg & Co. of Chicago. Their experiments have covered a period of over a year.

Many ideas were tried and found wanting but by a gradual process of accumulation and elimination some very pleasing results were obtained. McClurg's have embodied these in two of their Fall publications, "Snow Trenches," by Daniel H. Steele, and "Tremaine of Texas," by W. D. Hoffman, both to be published October 1.

On "Snow Trenches," a vivid, three color illustration has been printed directly upon the front and back covers and the backbone. William P. Welsh, noted cover designer for Woman's Home Companion, Collier's, American Magazine, Ladies' Home Journal and other national magazines, was the artist. The colors in which it is printed are Sun-Proof Yellow and Sun-Proof Green, developed specially for this book by the Charles Hellmuth Ink Co., and Permanent Brown, made by Sinclair & Valentine, Inc. All of these colors are guaranteed not to fade. Following the printing of the covers, which was done on an ordinary Gordon press in order to insure perfect register, a heavy, hard coat of varnish was given them, despite the fact that they were fairly waterproof originally. The covers may now be washed with a wet cloth.

After the books had been cased-in in the usual manner medium weight DuPont Cellophane wrappers were placed around them. Attached to the wrappers with a special glue were two tabs upon which was printed a description of the stories.

Upon the endsheets of "Snow Trenches" appears a decorative map of North Russia, in which the story takes place, which was executed by Karl Peter Koch, a well known map artist who works in the modern style. Another important feature of both books is the extra heavy tape super made by the Kendall Mills. Rigid tests have shown that books bound with tape super are 40 percent stronger due to the fact that the strength is distributed around the book, that there is frequent reenforcement, that it lies flat and smooth and that there is greater tensile strength. This 40 percent additional strength plus the superior lasting qualities of a special flexible binders' glue which has been used in the binding is not only of vast importance to rental and public libraries but to the average book user as well.

The paper used in the books has been developed by the West Virginia Pulp and Paper Company to minimize the possibilities of eye strain. It has a soft, creamy shade with an antique surface upon which halftone illustrations have been successfully printed. This, in itself, is an achievement. In line with this aim of doing away with eye strain, "Snow Trenches" has been set in the Mergenthaler Linotype Company's latest book type face, Linotype Baskerville, which is a reproduction of the original types of John Baskerville, the noted eighteenth century English printer, paper maker and letter founder. It was recut under the direction of George W. Jones, the designer of Granjon and Estienne.

NEWS PRINT FOR AUGUST

Production of news print paper in Canada during August, 1931 amounted to 165,124 tons and shipments to 162,303 tons. According to the News Print Service Bureau production in the United States was 88,344 tons and shipments 89,047 tons, making a total United States and Canadian news print production of 253,468 tons and shipments of 251,350 tons. During August, 24,402 tons of news print were made in Newfoundland and 1,351 tons in Mexico, so that the total North American production for the month amounted to 279,221 tons.

The Canadian mills produced 219,739 tons less in the first eight months of 1931 than in the first eight months of 1930, which was a decrease of 13 per cent. The output in the United States was 106,808 tons or 12 per cent less than for the first eight months of 1930. Production in

Newfoundland was 4,726 tons or 2 per cent more in the first eight months of 1931 than in 1930 and in Mexico 655 tons more, making a continental decrease of 321,166 tons or 11 per cent.

During August the Canadian mills operated at 51.3 per cent of rated capacity, United States mills at 59.2 per cent, Newfoundland mills at 96.4 per cent and Mexican mills at 73.2 per cent, making a continental average of 56.1 per cent. Stocks of news print paper at Canadian mills totalled 49,128 tons at the end of August and at United States mills 32,607 tons, making a combined total of 81,735 tons, which was equivalent to 4.5 days' average production.

Westminster Paper Co. Busy

VANCOUVER, B. C., October 3, 1931—The annual meeting of the Westminster Paper Company Limited was held recently at the offices of the firm, 5th avenue and 16th street, New Westminster. Very satisfactory reports were submitted, and all officers and members of the board of directors were re-elected. These included J. J. Herb, president and manager, A. Wells Gray, mayor of New Westminster, vice-president; H. M. Lord, secretary-treasurer; directors, J. G. Robson, S. A. Lake, Francis Wright, C. A. Henley, Fred Smith, and Alderman J. Peck.

The plant continues to operate steadily, officials of the company state. Some departments, including the paper machine and printing presses are operating 24 hours a day.

While no statistical information is being divulged at the plant, it is reported in business circles that the company is operating on a capacity basis, and that during June it made a net profit of $3,162 after payment of all interest and of fixed charges. The net profit for the six months ended June, 1931, was unofficially reported to be $36,438.

The company has recently installed a two-color speed press at its plant to facilitate the production of printed fruit wrappers. In addition to developing an extensive market in the Okanagan of British Columbia and in Eastern Canada for these wrappers, the firm also is developing a market in South Africa as well as steadily increasing the market which it already enjoys in Australia and New Zealand. The firm has also broken into the Chinese market with this commodity. In addition to fruit wrappers, the company is also producing paper napkins, towels, and similar lines, as well as wax paper and toilet papers.

Compensation Rewards

CANTON, N. Y., October 5, 1931.—A number of injured paper mill workers were among those receiving awards at a session of Compensation Court with Referee James P. Richardson presiding. George Matovichik was granted compensation from June 19 to date at a rate of $18.93 for injuries received while in the employ of the De Grasse Paper Company and the case was ordered continued pending further medical treatment. This was the second recent award granted him for injuries. The inability of physicians to determine whether Albert Beauien is suffering loss of use of a hand as result of an injury while working for the Racquette River Company in 1930 will result in an examination by several physicians, the case being ordered continued. Compensation for 22 weeks at $13.46 was given Walter Yerdon for injuries sustained while he was working for the Loomis Talc Corporation at Gouverneur.

Pulp and Paper Production in July

According to identical mill reports to the Statistical Department of the American Paper and Pulp Association from members and cooperating organizations, the daily average of total paper production in July decreased 1 per cent under June and was 3 per cent under July, 1930. The daily average wood pulp production in July was 10 per cent below June, 1931, and 8 per cent under July, 1930.

Compared with July a year ago, the daily average production registered a decrease in the following grades: News print, uncoated book, writing, and hanging papers. Compared with June, 1931, the following percentage decreases were registered in the daily average production: News print, 1.5 per cent; uncoated book, 7.2 per cent; wrapping, 0.1 per cent; writing 10.2 per cent; hanging, 3.8 per cent; and building, 2.0 per cent.

The seven months' cumulative total of production of paper was 10.4 per cent below the corresponding period in 1930 while shipments were 9.7 per cent smaller than a year ago. All the major grades of paper, excepting writing and hanging papers, have shown improvement at the end of the seven-month period as compared with the end of the six-month period.

The seven months' cumulative total of wood pulp production for this year was reported as 17.6 per cent below the level of the same period in 1930.

Total shipments of wood pulp to the outside market were 28.1 per cent below the level of the seven months' total of 1930. Bleached sulphite, mitscherlich and kraft pulp shipments to the open market were greater than in the first seven months of 1930.

Total wood pulp inventories showed a continued decrease and at the end of July, were 26 per cent below the level of July, 1930. All grades, except mitscherlich pulp, showed inventories below the level of Juy, 1930.

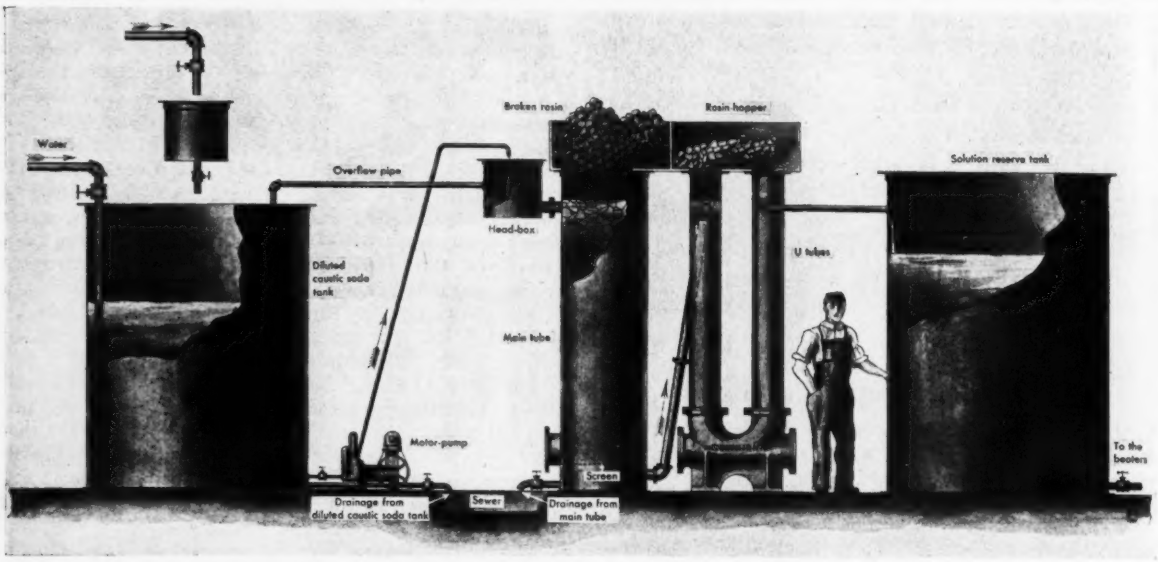
REPORT OF PAPER OPERATIONS IN IDENTICAL MILLS FOR THE MONTH OF JULY 1931

Grade	Production Tons	Shipments Tons	Stocks on Hand End of Month—Tons
Newsprint	99,548	97,225	33,616
Book, Uncoated	69,666	70,960	46,816
Paperboard	160,826	163,484	59,739
Wrapping	44,502	44,920	42,833
Bag	12,054	12,465	5,996
Writing, etc.	21,126	22,176	47,778
Tissue	6,163	6,236	4,390
Hanging	2,631	1,847	2,105
Building	5,179	4,714	3,313
Other Grades	13,672	13,206	14,385
Total, All Grades July 1931	435,367	437,233	260,971
Total, All Grades, 7 Mos. 1931	3,098,908	3,098,189	260,971
Total, All Grades, 7 Mos. 1930	3,459,178	3,429,897	266,059

REPORT OF WOOD PULP OPERATIONS IN IDENTICAL MILLS FOR THE MONTH OF JULY 1931

Grade	Production Tons	Used During Month— Tons	Shipped During Month— Tons	Stocks On Hand End of Month— Tons
Groundwood	66,428	70,762	1,689	67,584
Sulphite News Grade	27,239	25,744	407	6,124
Sulphite Bleached	17,631	15,612	2,112	2,900
Sulphite Easy Bleaching	2,366	2,359	18	885
Sulphite Mitscherlich	2,947	2,142	754	1,906
Kraft Pulp	27,079	23,038	5,211	4,800
Soda Pulp	15,813	13,221	2,735	2,859
Pulp—Other Grades	601	467	72	163
Total, All Grades July 1931	160,104	153,345	12,998	87,221
Total, All Grades, 7 Mos. 1931	1,219,715	1,097,872	103,894	87,221
Total, All Grades, 7 Mos. 1930	1,480,157	1,282,635	144,471	117,899

"Price is one of the factors that determines the grade of the paper. Paper distributors and consumers are not apt, for long, to pay something for nothing. Costs and market acceptance determine the price." This little lesson on business economics starts off "Rags in Paper," number 34, published by the Rag Content Paper Manufacturers, and opens the way to inside copy equally interesting. The effective story ends with "The finer product is higher priced for it costs more to make. It is more distinctive, effective and desirable in appearance and appeal."



SIMPLIFIED CONSTRUCTION OF DELTHIRNA SYSTEM Assures Minimum Maintenance and Lasting Durability

THE utter simplicity of operation is demonstrated in above illustration. Concentrated caustic soda is diluted with water in the Diluted Caustic Soda Tank. The motor pump then raises the diluted caustic soda solution to head box. From there it passes through the main tube and U tubes which have been previously filled with broken rosin, becoming richer and richer in rosin until its saturation point is attained. When through last U tube it passes into Size Reserve Tank, and is then ready for use in beaters.

A DELTHIRNA Plant should last life of mill because there are no moving parts, except the small, fractional horsepower pump, and there are no corrosive actions.

SAVE 30% AND MORE IN YOUR SIZING COST WITH THE DELTHIRNA SYSTEM.

YOU CAN PAY FOR THE DELTHIRNA SYSTEM FROM THE SAVINGS EFFECTED.

DELTHIRNA

MANSFIELD, BOLTON & KENT

501 Fifth Avenue, New York Sole Sales Agents in U. S. for

AMERICAN DELTHIRNA CORPORATION

Section of the
Technical Association of the Pulp and Paper Industry
Edited by Ronald G. Macdonald, Secretary

Sole and Joint Inventors

The patent law makes it essential to the validity of a patent that it shall be granted on the application, supported by the oath, of the original and first inventor. And this is true whether the inventor retains the title to the invention in himself or assigns it to another. The only exception to the rule is made in case the inventor dies or becomes insane before the papers are prepared, in which case his executor, administrator or guardian may sign them.

If several persons contribute mutual suggestions which result in a unitary invention, they are joint inventors and all must join in filing the application. If any of them fail to sign, the patent will be held invalid. The same result follows if a person who had no part in creating the new device files the application in his own name or joins with the true inventor in signing the papers. In this connection it must be emphasized that one who makes a financial contribution and nothing more is not a joint inventor. He may secure an interest in the invention by an assignment from the inventor, but he must not join in signing the application.

The mere fact that one who conceives an invention avails himself of the constructive skill and ingenuity of another to reduce the inventive idea to practice does not make the second person a joint inventor. And this is so, even if the second person makes valuable discoveries as long as they are merely ancilary to the plan and preconceived design of his employer. But, if the second person makes suggestions which modify and make the main idea operative or contributes an independent part of the entire invention which combines with the part produced by the other to create the whole, he is entitled to be considered a joint inventor and must join in signing the application. Furthermore, if the second person is merely given a problem in very general terms or finds it necessary to discard or depart radically from the plans of his employer, he is the sole inventor and the application must be filed by him alone. Under proper circumstances, however, the patent, when issued, may belong to the employer, or he may be entitled to a limited right or license therein. The subject of employer and employee will be taken up in a subsequent bulletin.

If there is any doubt as to whether a person is a joint inventor, it is advisable to have him sign the application. If it should later appear that he is in fact not a joint inventor, his name can be eliminated from the application with his permission, provided it has not yet matured into a patent. On the other hand, the omission of a joint inventor's name from an application cannot be supplied or corrected, except by filing another application. And it often happens that by the time the mistake is discovered the device of the invention has been in public use or on sale for more than two years, in which case it is too late to file another application.

In conclusion it may be stated that courts require very strict proof on the question of joint invention before invalidating an otherwise valid patent on this ground.

Note: This is the eleventh contribution of the Patents Committee of the Technical Association of the Pulp and Paper Industry, C. W. Rivise, chairman. Others will appear in future issues of the PAPER TRADE JOURNAL.

Opaque Mitscherlich Sulphite Paper

SPECIAL INQUIRY No. 165

A member writes: "How can an opaque sheet be made from Mitscherlich sulphite pulp, to be run on a yankee machine and to be made from bleached pulp, sheet to be snow white in color? This paper must have a good Mullen and Schopper test and also to be soft and pliable?"

Any one contributing information to this inquiry will receive a complete transcript of replies. Send contributions to the Secretary of the Technical Association, 370 Lexington avenue, New York.

Cleaning Fourdrinier Wires

SPECIAL INQUIRY No. 166

A member writes: 1. "We would like to know of the different mechanical means for cleaning fourdrinier wires and the opinion of individuals using them, as to whether the equipment is satisfactory for the purpose, and the difference in life of the wires through the use of such equipment.

2. "We should also like to learn of the various methods used in scouring wires, composition of solutions used, whether acid or caustic, and the concentration in each case."

A transcript of all the replies received will be sent to all who contribute information to this inquiry. Send replies to R. G. Macdonald, 370 Lexington avenue, New York.

Geary-Jennings Sampler

The Geary-Jennings Sampler, for which the Galigher Company, of Salt Lake City, Utah, are sole agents, with eastern district office at 52 Vanderbilt Avenue, New York, in charge of Chester H. Jones, is designed and built to operate on correct sampling principles. It was developed in the metal mining industry, where because of the high value content of materials handled and the variable nature of streams of these materials, sampling methods have been carefully studied and mechanical sampling devoted to a high degree of excellence. A mechanical sampler, designed and built to operate on correct sampling principles accomplishes more than reduction of sampling costs. It obtains samples which are accurately representative. It eliminates the human element, always present when samples are taken by hand.

The Relation of Sheet Properties and Fiber Properties in Paper*

II. The Variation of Ultimate Tensile Strength With Basis Weight and Related Factors

By R. H. Doughty [1]

Synopsis

In seeking to explain the fact that the breaking length of paper (ordinarily used as a measure of ultimate tensile strength) is not proportional to basis weight but on the contrary reaches a maximum as basis weight is increased from a low value, the Forest Products Laboratory has prepared and analyzed a series of test sheets of several basis weights, wet-pressed at several pressures in order to produce various fractions for each basis weight. The following relations were studied:

(1) The variation of ultimate tensile strength with solid fraction at constant basis weight,

(2) The variation of ultimate tensile strength with basis weight at constant solid fraction, and

(3) The variation of solid fraction with basis weight at constant wet pressure.

The results have shown that the commonly observed relation between breaking length and basis weight is governed by uncontrolled combinations of the three variables considered. The study has further shown that variation with basis weight is due primarily not to variation of basis weight as such, but rather to fiber orientation as a manifestation of the variation in consistence when sheets of different basis weights are made, using equal volumes of stock. This may be explained on the assumptions that the way in which the fibers lie in a sheet depends somewhat on the consistence of the stock from which that sheet was formed, and that the strength of a sheet depends upon the directional arrangement of the fibers therein, as well as on the solid fraction. In this work the suitability of using the basic quantities, ultimate tensile strength and solid fraction, in an analysis of paper properties and their causation is illustrated; the mathematical relations of these properties to breaking length, basis weight, and thickness are developed.

* Presented at the fall meeting of the Technical Association of the Pulp and Paper Industry, Kalamazoo, Mich., Sept. 24-26, 1931.

Contribution of the TAPPI Research and Development Division.

[1] Member TAPPI, assistant engineer, Forest Products Laboratory, Madison, Wis. TAPPI-APPA Fellow.

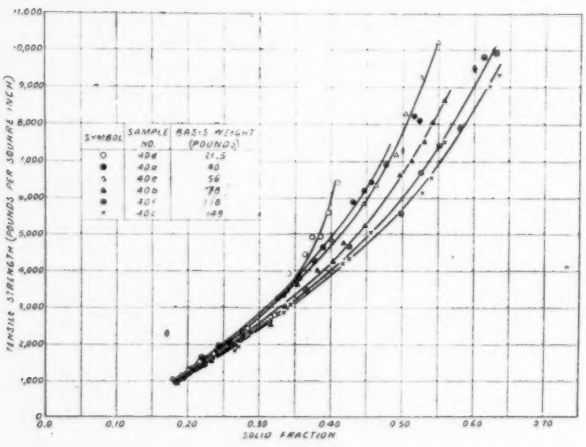


FIG. 1.

Ultimate tensile strength-solid fraction-basis weight relations for an unprocessed pulp.

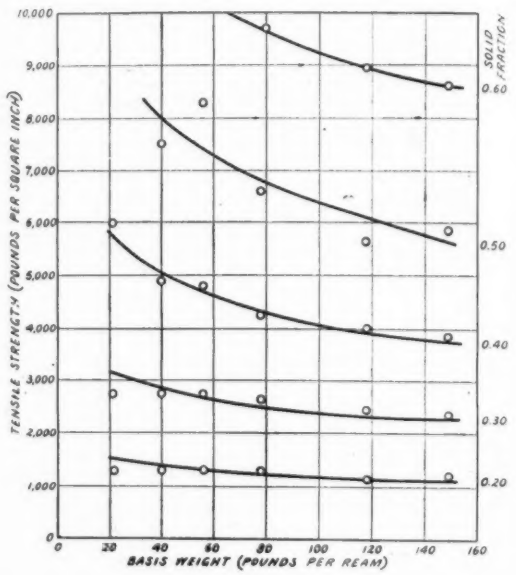


FIG. 2.

The variation of ultimate tensile strength with basis weight at constant solid fraction.

Introduction

Most workers in the field of paper testing have been impressed with the necessity of correcting physical test data for the factor commonly termed "basis weight." This is done specifically in the bursting test, which is expressed as "points per pound per ream," or "per cent," and in the tearing test, which is expressed as "grams per pound per ream." It is also done in the tensile test, by calculating the results in terms of "breaking length" rather than expressing them as load or strength at rupture.

The breaking length should presumably be constant for sheets of one pulp made up under identical conditions but of different weights. However, this is not SO[2]. As the basis weight is increased from a low value, the breaking length at first increases to a maximum and then decreases. A probable reason for this was suggested by Heritage[3] in his analysis of data published by Cameron.[2] The study here reported was designed to determine with some exactitude the cause of this behavior, to show its significance in paper testing and use, and to ascertain in a preliminary way whether the variation of tensile strength with basis weight could be taken as a measure of three-dimensional fiber orientation in the sheet, which is the formation factor in sheet structure.

This work was done in the Forest Products Laboratory under a

[2] Jonas, K. G., *Papier-Fabr, 28*, 800-5 (1930); Wilen, K., *Paper 27*, No. 17, 15-17, 36 (Dec. 29, 1920), *Pulp Paper Mag. Can. 28*, 1181-4 (1920); Cameron, E. P., *Pulp Paper Mag. Can. 31*, No. 5, 12 (1923); Cameron, E. P., and Payne, J. M., *ibid. 32*, No. 3, 53-60 (Jan. 17, 1924).

[3] Heritage, C. C., *Tech. Assoc. Papers, Series 13*, 22 (1930).

research fellowship jointly supported by the American Paper and Pulp Association and the Technical Association of the Pulp and Paper Industry. The present report is the second of the series planned to cover the relation of sheet properties and fiber properties in paper, the field in which research work is supported by the two Associations.

The notation used in this article follows:

A = numerical constant relating W, F, and t.
b = formation strength, a factor depending on sheet materials and structure.
BL = breaking length of the paper.
C = consistence of the pulp.
F = solid fraction of the sheet.
K = load required to rupture a specimen sheet.
k = fiber strength at unit consistence, a factor depending on sheet materials only.
m = slope of tensile strength-solid fraction logarithmic curve.
n = slope of formation strength-consistence logarithmic curve.
Q = cross section of a test specimen.
S = ultimate tensile strength.
t = thickness of the sheet.
W = basis weight.

Designation of Paper Properties

The concepts of *ream weight* and *breaking length* in connection with paper evaluation have the sanction of long usage in the industry, and the advantage that everyone in the industry knows how to interpret them in terms of personal experience. Critical consideration will show, however, that both leave a great deal to be desired from the standpoint of explicitness. Disregarding for the present the difficulties introduced by the multiplicity of ream sizes in existence, it is plain that setting the specifications of a sheet with weight per unit area leaves one dimension, thickness, uncertain.

It should be noted that in this report the term "basis weight" refers to the weight of a ream of 500 sheets of paper 24 x 36 inches in size. By definition, therefore, basis weight is the weight of 3000 square feet of paper, the thickness and density of which are unknown. Hence, still by the definition now accepted in the paper industry, it is the weight that many possible compositions and a multiplicity of varying manufacturing processes have attached to an area of finished produce; in common with ream weight, it fails even to mention volume. Obviously such a definition has little in common with the standard definitions of engineering and science. It is sometimes used in a general way in this report as synonymous with ream weight. However, ream weight, but *not* basis weight, can be very considerably altered simply by changing the ream size, without affecting in the slightest degree any of the sheet characteristics except length and width. This report is not concerned with the effects of such variations.

The preceding article of this series[4] was intended primarily to show the significance of solid fraction by volume in controlling sheet-strength properties. Solid fraction was used, rather than apparent or bulk density, because it refers more directly to the solid, fibrous portion of the sheet, which obviously is of most importance in producing sheet properties. In this article, also, the tensile strength at rupture was used rather than breaking length, of which little mention was made. This was done for the reason that ultimate tensile strength is a simple engineering quantity, while breaking length is a complicated function of ultimate tensile strength, basis weight, and sheet thickness. The purpose in introducing these new strength and structural concepts was to advance the evaluation of paper properties by furnishing a means of isolating single fundamental properties and expressing them in exact engineering terms, a basic step in the development of papermaking as an engineering science.

[4] The Relation of Sheet Properties and Fiber Properties in Paper. I. A Qualitative study of the tensile strength-solid fraction relation. R. H. Doughty. *Tech. Assoc. Papers 14*, No. 1, 243-8 (1931).

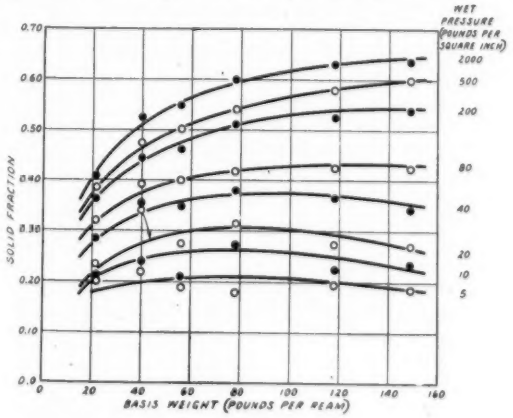


FIG. 3.

The variation of solid fraction with basis weight under constant wet pressure.

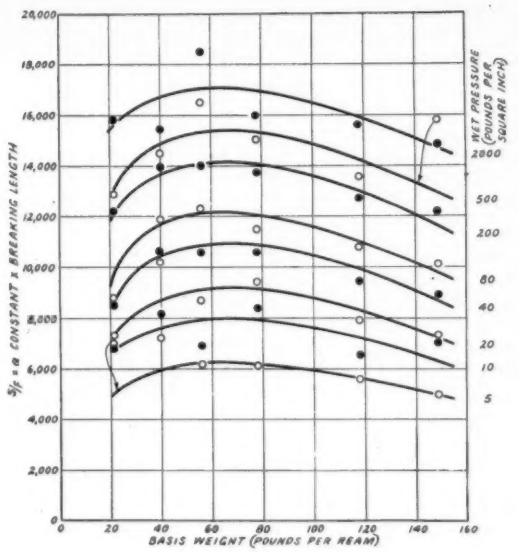


FIG. 4.

The variation of the S/F ratio with basis weight under constant wet pressure.

It is a matter of mathematical experience that, when a study of the relation between two variable factors leads to a complicated and apparently irrational function, careful analysis will disclose that one or both of the original variables is a complex of several factors. When these factors are isolated and studied separately, simple relations that can be combined to reproduce the original complicated relations are usually found. In the present study, the apparently complex known relation between breaking length and basis weight was simplified by considering the actual tensile strength of the material and introducing the solid-fraction concept. Since a good understanding of the functional relations between these quantities is necessary for the ready interpretation of the results of this study, they will be discussed in some detail before the experimental work is presented.

Functional Relations of Paper Properties

First of all, solid-fraction values alone serve no better than basis weight alone to express completely the structural characteristics of a sheet of paper. Later in this article it will be shown that sheet thickness may also be an important factor. The relation between solid-fraction values F, caliper or thickness t, and basis weight W is:

$$W = AFt \qquad (1)$$

When two of the three variable factors in this equation are fixed the third is determined; the constant A, on its part, is determined by the material of the furnish. For example, when W is expressed as pounds per ream of 500 sheets 24 by 36 inches, (the size used in calculation throughout this work), t in thousandths of an inch, F as a decimal fraction, and the value of 1.5 is assumed as

the density of fiber substance, A has the numerical value 23.4. Thus, equation (1) becomes:

$$W = 23.4\ Ft \qquad (2)$$

The ordinary tensile test gives the magnitude of load K required to rupture a speciment of cross-section Q, and the ultimate tensile strength S is simply: $S = K/Q$

With the Schopper tester, for which K is recorded in kilograms, the thickness of the specimen t is measured in mils, and the width is always 15 mm., the tensile strength in pounds per square inch is

$$S = 3734\ K/t \qquad (3)$$

Breaking length, which by definition is the length of strip that, if suspended at one end, would rupture under its own weight at the point of suspension, is calculated from the results of the tensile test. With the 24 x 36 — 500 ream paper, a strip one square inch in cross section and 36 t feet long would have a weight equal to the basis weight in pounds. The breaking length in feet would be

$$BL = 36t\ S/W$$

To change to metric units, which are more usual in this connection, the resulting value is multiplied by 0.3048, giving BL in meters. Then introducing the value of $t/W = 1/(23.4F)$ from equation (2) gives finally

$$BL = 0.4689\ S/F \qquad (4)$$

Equations (2) and (4) contain numerical constants that depend upon a particular ream size, although they are independent of the weight. Yet their form is general, regardless of ream size, and they may be taken as the basic functions expressing the relation of the old to the new sheet attributes. They show that each of the older quantities of basis weight and breaking length really contains two factors. Basis weight is proportional to the product of solid fraction and thickness values, while breaking length is proportional to the product of tensile strength and the reciprocal of the solid-fraction value. Separation of these factors might be expected to lead to a simplified interpretation of some of the observed phenomena of paper strength. The truth of this expectation is shown by the work here reported.

Experimental Material and Procedure

The test material used in this work was produced from strong, unbleached, unprocessed spruce sulphite pulps, made at the Forest Products Laboratory under normal cooking procedures. Samples of the different pulps were wet screened through 0.004-inch cuts, and test sheets were prepared as described in a previous report.[4] The procedure involves formation on a 7 by 9-inch sheet machine, couching on a blotter, pressing between blotters at pressures selected to give a range, as wide as possible, of solid fraction values in sheets of the same weight and formation, and drying between the blotters at 70 to 80 deg. C. The dry sheets were separated from the blotters, and their thickness, weight, and tensile strength determined. The number of sheets made and used was that shown by experience to be sufficient to yield reliable average test values.

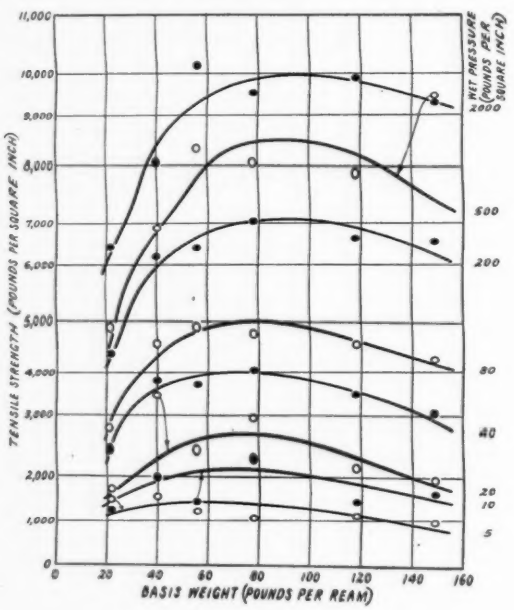


FIG. 5.
The variation of ultimate tensile strength with basis weight under constant wet pressure.

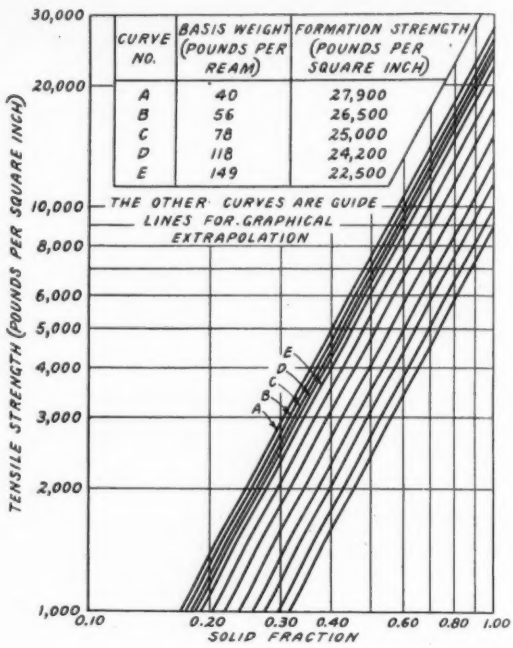


FIG. 6.
Adjusted logarithmic ultimate tensile strength-solid fraction curves at constant basis weight.

Presentation of Results

The results obtained in this study are presented graphically in Figures 1 to 8, inclusive, and also in tabular form in Table 1, in which the groups of data are arranged in accordance with the basis weight. The series of tests on sample 39 were preliminary experiments to determine the nature and the magnitude of the effects of the several variables to be expected. Samples 40a to 40f inclusive represent a detailed study of the basis-weight effect for one pulp while sample 40g was used as a preliminary test of the consistence factor in sheet formation.

Figure 1 shows the values of tensile strength plotted to solid fraction for sheets of one pulp ranging from 21.5 to 149 pounds basis weight. It is obvious from these curves that, when strength at constant solid fraction is under consideration, there is a decrease of strength with increase in basis weight, and the rate of this decrease becomes greater at the higher solid fractions. The 21.5-pound sheets offer a partial exception to this rule, in that, at solid-fraction values below about 0.30, they were weaker than the sheets of higher basis weight. Some possible explanations for the apparent erratic behavior of the 21.5-pound sheets will be considered later in this report.

The curves of Figure 2 show more plainly than those of Fig. 1 that the change of tensile strength with basis weight at *constant* solid fraction is reasonably smooth and continuous, and that the rate of change is greater the higher the solid fraction. These

curves show no maxima. Since, by equation (4), breaking length at constant F is simply proportional to the tensile strength, it is plain that there would also be no maxima in the curves of breaking length plotted against basis weight *at constant F*. There must, therefore, be some other factor that produces the usual test results. This factor can be found by examining the effect of basis weight on the wet pressure-solid fraction relation.

Only one wet pressure is used in the preparation of sheets for usual routine testing, whereas in this work a series of sheets was made up under several wet pressures in order to obtain a series of solid-fraction values. In both procedures the solid-fraction value of the dry sheets depends on the magnitude of the pressure and the shrinkage of the sheet during drying. The curves of Figure 3 show what actually occurs. In this figure the solid-fraction values obtained by several constant wet pressures are plotted against basis weight. The solid fraction values increase continuously with basis weight, though less rapidly the higher the basis weight or the lower the wet pressure.

The maximum in the breaking length-basis weight curves heretofore obtained can now be explained; it is due to a combination of the three factors isolated and shown separately in Figs. 1, 2, and 3. At *constant solid fraction* the tensile strength decreases continuously with increase in basis weight (Fig. 2), and at *constant wet pressure* the solid fraction increases with increase in basis weight (Fig. 3), while at *constant basis weight* the tensile strength increases with the solid fraction (Fig. 1). At fairly low basis weights, the increase in solid fraction that results on going to a somewhat higher weight, using one wet pressure, is considerable; it is sufficient to make the heavier sheet actually stronger than the lighter one. At higher weights, the increase in solid fraction with increased weight diminishes and the decrease of tensile strength with increasing weight becomes the predominant factor. The results of this combined behavior are shown graphically in figures 4 and 5.

The values of S/F, the breaking length ratio, are plotted against W for several wet pressures in Figure 4, while the tensile-strength values are similarly plotted in Figure 5. It is an interesting fact that while the S/F against W curves all show maxima at about 60 pounds weight, a value agreeing well with the experience of others, the maxima of the S against W curves are progressively displaced to higher basis-weight values with increase in wet pressure.

Another fact that should be mentioned in connection with Fig. 4 and 5 is that the tensile strength values for 40, 80, and 200 pounds per square inch wet pressure lie much closer to the smooth curves than those at higher or lower wet pressures. The assumption that these values are more accurate than the others seems justified. With these sheets, made of unbeaten pulp, this range in pressure gives an intermediate range of solid-fraction values. When solid fraction values are low, the soft and bulky nature of the sheet introduces an uncertainty in the thickness determination, which is reflected in the calculated ultimate tensile strength values. Further, at high solid-fraction values, damage to the sheets by high pressure and by adherence to the blotters may cause more erratic test results. The occurrence of vitiating conditions at each end of the range in solid-fraction values employed in these tests is of especial interest in connection with the pressures used in the current "standard" pulp-testing methods.

Having determined that the immediate cause of the behavior of the usual tensile-strength test lies in the combined variations of

TABLE 1.—BASIS WEIGHT, SOLID FRACTION, AND TENSILE STRENGTH DATA FOR TEST SHEETS OF UNBLEACHED AND UNPROCESSED SPRUCE SULPHITE PULPS

Sample No.[1]	Consistence during formation, per cent	Wet pressure lbs./sq. in.	Basis weight (24x36—500) pounds	Solid fraction	Ultimate tensile strength lbs./sq. in.
39	0.018	30	23.3	0.244	1240
	.012		34.3	.254	1180
	.014		39.5	.255	1300
	.028		68.6	.268	1240
	.036		88.8	.267	1230
	.050		123.1	.268	1190
	.066		160.0	.261	1020
	.105		260.0	.266	910
40d	.008	2	22.0	.195	1220
		5	20.8	.215	1510
		10	21.7	.201	1280
		20	20.8	.235	1740
		40	21.2	**.283**	**2420**
		80	21.4	.320	2790
		125	21.0	.339	3920
		200	21.8	.363	4420
		300	21.5	.373	4900
		500	22.2	.384	4910
		1000	21.6	.396	5570
		2000	21.7	.407	6430
		Av.	21.5		
40a	0.016	2	37.4	.203	1300
		5	38.7	.219	1580
		7.5	40.4	.218	1650
		10	37.7	.241	1980
		15	41.3	.258	2110
		20	37.5	.337	3450
		25	42.2	.325	3240
		30	39.7	.332	3330
		40	41.6	.354	3780
		55	42.7	.376	4250
		75	42.4	.388	4620
		100	38.7	.394	4800
		150	39.5	.429	5870
		200	39.4	.444	6190
		300	41.0	.455	6420
		500	39.9	.476	6890
		1000	42.0	.516	8190
		2000	38.2	.523	8050
		Av.	40.0		

Sample No.	Consistence during formation per cent	Wet pressure lbs./sq. in.	Basis weight (24x36—500) pounds	Solid fraction	Ultimate tensile strength lbs./sq. in.
40b	0.032	2	76.3	0.202	1300
		5	78.4	.179	1040
		7.5	79.4	.232	1540
		10	78.0	.273	2380
		15	78.8	.287	2340
		20	79.7	.315	2960
		25	77.4	.335	3070
		30	78.1	.352	3620
		40	79.1	.380	4030
		55	77.9	.403	4270
		75	79.2	.417	4790
		100	76.8	.447	5260
		150	77.9	.496	6620
		200	74.9	.512	7030
		300	80.0	.530	7540
		500	74.4	.540	8050
		1000	78.1	.561	8690
		2000	77.6	.600	9550
		Av.	78.0		
40f	0.048	2	120.7	.181	
		5	122.5	.194	
		10	125.3	.222	
		20	119.4	.272	
		40	117.8	.365	
		80	114.3	.425	
		125	117.6	.497	
		200	118.5	.525	
		300	118.0	.550	
		500	116.3	.579	
		1000	115.0	.613	
		2000	114.3	.630	
		Av.	118.3		

Sample No.	Consistence during formation per cent	Wet pressure lbs./sq. in.	Basis weight (24x36—500) pounds	Solid fraction	Ultimate tensile strength lbs./sq. in.
40e	0.023	2	55.8	0.178	1070
		5	56.5	.190	1170
		10	57.9	.210	1450
		20	55.7	.274	2380
		40	54.7	.347	3670
		80	53.1	.400	4910
		125	56.6	.445	5860
		200	56.1	.462	6390
		300	56.5	.493	7180
		500	55.0	.502	8290
		1000	54.1	.526	9300
		2000	55.7	.548	10190
		Av.	55.6		
40g	0.040	125	28.2	0.387	1980
	.020		28.9	.381	**2400**
	.010		26.8	.379	2530
	.072		50.3	.392	2270
	.036		51.5	.400	2310
	.018		51.6	.397	2400
	.144		100.0	.395	1730
	.072		99.0	.402	2050
	.036		101.0	.398	2180
	.288		199.0	.374	1430
	.140		194.0	.383	1880
	.070		191.0	.380	2030
	.550		369.0	.393	1210
	.275		385.0	.391	1390
	.137		394.0	.392	1530

Sample No.	Consistence during formation per cent	Wet pressure lbs./sq. in.	Basis weight (24x36—500) pounds	Solid fraction	Ultimate tensile strength lbs./sq. in.
40c	0.062	2	146.9	0.180	922
		5	150.5	.185	934
		7.5	146.8	.192	**1068**
		10	151.9	.234	1640
		15	150.0	.264	1820
		20	149.9	.268	1940
		25	150.5	.315	2650
		30	141.6	.332	2860
		40	150.9	.343	3050
		55	153.3	.416	4190
		75	142.7	.425	4300
		100	151.7	.454	5060
		150	152.7	.528	6140
		200	151.7	.540	6550
		300	152.1	.556	7780
		500	140.7	.599	9480
		1000	151.4	.622	9000
		2000	148.3	.635	9310
		Av.	149.0		

[1] Pulp samples 39, 40a to f inclusive, and 40g were from three separate digestions numbered 3433, 3444, and 3476, respectively.

strength and of solid-fraction with basis weight, the next step is to investigate these factors separately.

The possibility that the tensile strength decreases with increase in weight because of a change in the orientation of the fibers has been suggested. Most papers are anisotropic in structure. In a very light sheet, the great majority of the fibers must lie in the plane of the sheet. At higher weights there is a greater opportunity for fibers to arrange themselves at right angles to this plane. Any fibers so orientated would no longer have their long axes in the direction of tensile stress, and so would contribute a smaller part to the strength of the sheet. In a sheet or board having a thickness very great in proportion to the fiber length, so that random orientation of fibers in three directions could occur, the strength should be approximately two-thirds that of a sheet so thin that all the fibers lie in one plane. This change in arrangement, without doubt, would also make a difference in the manner in which the sheets shrink on drying.

Another possibility is that the proportion of fine particles lost in the white water is different at different weights; that is, a variation in the material of the sheet may occur. Some preliminary work on the relation of fiber length to sheet strength, however, has indicated that for the present this factor can safely be neglected; the change in tensile strength resulting from change in the proportion of fine particles can be considered, in first approximation, as caused entirely by the change in solid fraction, for which correction has here been made.

In order to examine the relation between tensile strength and weight, some form of plotting of the test data that lends itself readily to mathematical expression is necessary. Since all the data can be presented satisfactorily on logarithmic coordinate paper, and since all except the 21.5-pound sheets behave in a very regular manner in such plotting, this method has been used, leaving the light-weight sheets out of consideration. Whether or not the logarithmic equation is a correct and general expression for the tensile strength-solid fraction relation of all pulps and stuffs need not be considered at this time; theoretical objections to the following treatment on the basis of limiting conditions may be raised and must be kept in mind, but so long as it expresses the existing test results satisfactorily it will answer the purposes of the present work.

The logarithmic plots of tensile strength against solid-fraction values for the 40 to 149 pound sheets, all adjusted very slightly to have exactly the same slope, together with a series of parallel lines for use in extrapolation, are shown in Figure 6. These lines, of the equation $S = b\,F^n$, have a slope n that is general for all weights of this pulp of 40 pounds per ream or more, and perhaps is also general for all pulps, and have an intercept b at unit solid fraction that is characteristic of the particular basis weight. Since this intercept gives strength at unit solid fraction and is dependent on basis weight, and hence presumably on formation also, it may be designated as the *"formation strength."*[3] Plotting the formation strength in tension against basis weight results in Figure 7, also a logarithmic straight line; this procedure leads finally to a formation-strength value at unit solid fraction and unit basis weight that is characteristic solely of the one pulp tested, and that may therefore be termed the *"fiber strength."* The complete equation for this pulp, when the proper numerical values of the constants are introduced, now becomes

$$S = 50{,}000\ W^{-0.165}\ F^{3.87} \qquad (5)$$

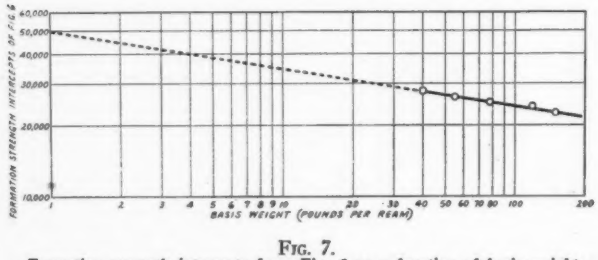


FIG. 7.
Formation strength intercepts from Fig. 6 as a function of basis weight.

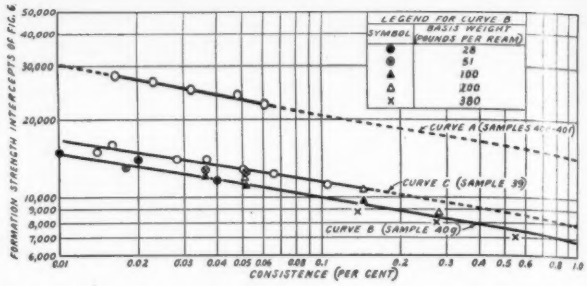


FIG. 8.
Formation strength as a function of consistence.

The general form of equation (5) and the nomenclature employed are those adopted by Heritage in the introductory papers of this series[3], [5] and used by him in setting up the fundamental hypothesis that the mechanical properties of a paper sheet are functions of its material properties and its structure. Heritage showed how the fiber strength might be used to determine exactly the conditions under which a sheet of definite strength could be produced from a particular pulp, and pointed out the advantages that would accrue therefrom in the rationalization of papermaking practice. The present results in addition to results previously published,[4] confirm the fundamental hypothesis. As predicted, there is a consistent relation between tensile strength and basis weight, as well as between tensile strength and solid-fraction values, and in a subsequent paper it will be shown in detail how this and similar relations may be used in designing papers of specific properties.

One other point, however, still remains to be considered. In making up these sheets the volume of stock in the deckle box of the sheet machine was the same for all. The stock consistence, therefore, varied in exactly the same way as the basis weight, and by changing the abscissas of Figure 7 suitably, as was done in Figure 8, A, equation (5) may be written as:

$$S = 14{,}200\ C^{-0.165}\ F^{3.87} \qquad (6)$$

where the consistence C is expressed in percentage. The value of 14,200 may be designated as *fiber strength at unit consistence* for this particular pulp. Since the fiber orientation in the sheet is determined not so much by the bulk of the finished sheet as by the conditions under which it was formed, the initial stock consistence, which controls the relative positions and arrangement of the fibers at the instant that they strike the forming sheet on the wire, must be of importance here. Therefore, if tensile strength can be related to fiber orientation, it can also be related, with equal logic, to consistence, of which orientation may be merely a manifestation.

The possible relation of tensile strength and consistence has been further examined by making up and testing a number of sheets in which the consistence of the stock was varied at each basis weight as well as with basis weight. The results are recorded in Table 1 under sample 40g. By means of extrapolation in Figure 6, the values of b (formation strength) for these sheets were obtained and were then plotted as curve B of Figure 8. The points are less regular than those of curve C, which represents the b values for Sample 39; the indications are that a basis-weight effect of some sort was superimposed on the consistence effect, but the tests were too few in number to permit any definite conclusions as to this. Quite probably factors such as fiber length, form, and stiffness enter the relation between consistence and fiber orientation.

The true nature of the variation in tensile strength, with basis weight has already been discussed. This relation, apparently com-

[5] Heritage, C. C. and Curran, C. E., chemical and Metallurgical Eng. 37, 80-4 (1930).

plicated when breaking length is used as a measure of strength and solid fraction is neglected, is greatly simplified by considering both the structural strength in tension and the solid fraction; in the final analysis, the results caused by the basis weight appear to come from an orientation effect that is governed primarily by consistence.

An approximate analysis has led to the following equation for expressing the relation between solid fraction, consistence and tensile strength: $S = k C^n F^m$. The two exponents n and m may or may not be general for all pulps. The coefficient k is different for different pulps, and since it is the tensile strength at unit solid fraction of sheets made up from a stock of 1 per cent consistence it has been designated as the "fiber strength at unit consistence." In general, a survey of data previously collected indicates that the value of k runs roughly parallel to the strength development possibilities of pulps as indicated by the customary pebble-mill testing method. This is illustrated in Table 2, in which the k values for samples 39, 40a to 40f, and 40g are presented, together with the maximum strength development of these pulps in the pebble mill.

TABLE 2
COMPARISON OF "FIBER STRENGTH AT UNIT CONSISTENCE" OF UNPROCESSED PULPS WITH THEIR STRENGTH AFTER PROCESSING

		Maximum values of			
		Bursting strength	Tensile strength	Tearing strength	Folding endurance
Sample No.	k Lbs./sq. in.	Pts./lb./ream	Meters breaking length	Gms./lb./ream	Double folds
40g	6800	0.89	4000	2.00	500
39	7800	.79	3370	2.54	460
40a to 40f	14200	1.25	5500	1.74	1310

The strength of a sheet of any definite solid fraction is decreased about 10 per cent with every doubling of the consistence of the stock from which the sheet is made up. As long as the consistence is kept constant, tensile strength at constant solid fraction is nearly independent of basis weight. Possibly there is a basis-weight effect, distinct from the consistence effect, that should appear more definitely in more extensive testing, although it is not clearly evident from the few tests of sample 40g. Since it did not stand out clearly in the tests made, in all probability it is small.

The change in tensile strength with change in consistence must be considered in the planning and especially in the analysis of tests on beaten or otherwise processed pulps. It is customary, when processed stock becomes so slow that a test sheet can hardly be formed under the conditions customary for unprocessed stock, to decrease the volume of water used, thus increasing the consistence, until the forming time is approximately that of the sheets made from unprocessed pulp. This may necessitate increasing the consistence from 8 to 16 times. To refer again to the first paper of this series, curves were there presented showing the change in the tensile strength-solid fraction curves on processing a sulphite pulp. It was observed that during processing the tensile strength at constant solid fraction at first increased, then remained constant for a time, and later suddenly decreased considerably. Reworking the original data has shown that application of the consistence correction here developed will eliminate the final sudden strength drop in a very satisfactory manner. This is of considerable importance in any attempt to analyze the phenomenon of processing.

The fact that tensile strength does vary inversely with consistence is evidence that an orientation factor of some sort is involved, as was postulated at the beginning of this study. A complete explanation of the part that orientation plays, however, will involve a mathematical analysis of the conditions governing fiber arrangement in the sheet, and the dependence of the sheet shrinkage and strength upon this arrangement. The material at present available is insufficient for this purpose. Such an analysis has been started, and will be reported upon when sufficiently advanced.

The shrinkage on drying can be estimated from the moisture content of the wet sheets and the solid fraction of the same sheets after drying. Shrinkage values calculated in this way for the 40, 78, and 149 pound sheets showed some interesting regularities, which may repay closer investigation. The moisture content after pressing was constant for any pressure, regardless of basis weight.

No shrinkage data were obtained for the 21.5-pound sheets, which was unfortunate, since such data might have helped in explaining the rather peculiar behavior of the sheets. From the tensile-strength curves, these sheets appear too weak at low solid fraction and too strong at high solid fraction of fall well in line with the other weights. Several explanations are possible. It has been suggested that the 20-pound sheet may have peculiar properties of its own, for the reason that it is just about two fibers in thickness. It is also possible that an error in thickness measurement, caused by excessive compressibility in the low solid fractions and the unusual effect of thick spots or large fibers in the high solid fractions, may explain the entire behavior. Such systematic errors would become progressively less with heavier sheets, and in such a way as to introduce an additional variable into the behavior of the curves, which from present knowledge could only be evaluated relatively, somewhat like latent heat or entropy in the thermodynamic calculations.

There can be no profit, at present, in pursuing so speculative a discussion too far. Within a reasonable limit however, it does service in indicating to some degree how important improved knowledge of sheet structure in its relations to fiber characteristics and sheet processing variables on one hand, and to sheet strength on the other hand, may become in an organized attempt to obtain the most efficient and profitable utilization of pulps. It also shows the immediate importance of the behavior of sheets on drying in determining some of the relations that exist, and the necessity of knowing the exact thickness of the sheets in making the different calculations involved.

The illustration of the way in which the consistence of the stock from which a sheet is made can affect the strength of the sheet is important both in testing and in paper production work. This illustration is developed on the basis of the tensile strength alone. The effect, however, must be equally important in the bursting test, which combines tensile and stretch properties,[6] in the folding test, for which tension is applied, and conceivably also in the tearing or any other test that depends to any extent upon fiber orientation in the sheet. This is in fact shown by the data of Cameron,[2] to which reference has already been made. Since thickness of the sheet is involved in the mechanics of the folding and the bursting tests, an additional variation with basis weight and also with solid fraction, over that shown by the tensile test, should be expected in the results of these tests. Only extended research can determine all these variations; the result of more exact and intelligent production of paper properties through control of the variables of the paper-making process appears to warrant this study amply.

From a study of the variation in ultimate tensile strength of test sheets, made from unprocessed spruce sulphite pulp, at various solid fractions and basis weights, it is possible to draw certain conclusions that may be tentatively applied to paper sheets in general. These conclusions are:

1. Sheets of constant basis weight show a mathematically regular increase in tensile strength with increase in solid fraction; the increase in solid fraction is obtained by increase in wet pressure.

2. Sheets of the same solid-fraction values show a regular decrease in tensile strength with increase in basis weight when the volume of stock used in their formation is kept constant and consequently the consistence is varied in proportion to the basis weight; this strength decrease is primarily a result of the consistence change rather than of the weight change.

3. Sheets made up under constant wet pressure show a continuous increase in solid fraction with increase in basis weight, as a consequence of greater shrinkage on drying.

4. As a consequence of the two effects just noted, sheets made up under constant wet pressure and with a constant volume (variable consistence) of stock first increase and then decrease in tensile strength when basis weight is increased from a low value.

(Continued on page 54)

Current Paper Trade Literature

Abstracts of Articles and Notes of Papermaking Inventions Compiled by the Committee on Abstracts and Bibliography of the Technical Association of the Pulp and Paper Industry

Clarence J. West, Chairman

For photostatic copies of articles appearing in the Abstract Section, address the chairman of the Abstracts Committee, Dr. Clarence J. West, National Research Council, 21st and B Streets, Washington, D. C. The charge for this service is: Photostats 9 x 12 inches, 18 cents each; 18 x 11 inches, 35 cents each; 22 x 18 inches, 70 cents each; minimum charge, 50 cents. Payment should be made upon receipt of invoice. Copies of United States patents may be obtained from the U. S. Patent Office, Washington, D. C., for 10 cents each. Send currency not stamps.

Sulphite Process

Process for the Manufacture of Cellulose from Wood or Similar Materials by Means of an Aqueous Solution of Sulphur Dioxide Under Pressure. A. S. Raoul Pictet and F. Tharaldsen, Oslo. Ger. pat. 504,667 (April 27, 1926).—According to the invention, a satisfactory decomposition of the wood is obtained by increasing the pressure of decomposition to at least 8 atmospheres by the use of a corresponding concentration of sulphur dioxide. The temperature of reaction is held under 120 deg. throughout the entire process.—J. F. O.

Process for the Decomposition of the Fiberous Materials of Plants With the Aid of Calcium Hypochlorite. I. G. Farbenindustrie Akt. Ges. Frankfurt a.M. Ger. pat. 506,229 (Aug. 23, 1927).—It has been found that a lignin-free pulp is obtained in one step, if wood is used as the raw material which can be pretreated in a suitable manner. The wood is treated with calcium hypochlorite solution at not too high temperatures and so that a solution with relative higher concentration is used at the begin ning and whose activity gradually becomes less through the process and finally sinks to zero. For example: 4 kilograms of wood wool in a moist condition and which has been pre-treated with an 0.5 per cent solution of sodium hydroxide at 95 deg. and the liquor then removed, is treated with 65 liters of a solution of calcium hypochlorite containing 2.8 per cent active chlorine and 0.15 per cent of calcium hydroxide. During the course of the decomposition process the solution gradually becomes milk of lime, containing 200 grams of calcium hydroxide, and in the degree that the content of free calcium hydroxide is held constant throughout the entire decomposition. If the phloroglucinol test gives a negative value for lignin, the pulp is separated from the liquor, washed till neutral and finally completely freed from calcium oxide by washing with acid. The yield is 55 per cent.—J.F.O.

Process for the Production of Pulp According to the Sodium Sulphite or Sulphide Cooking Method. Gustav Haglund, Stockholm. Ger. pat. 507,969 (April 24, 1928).—An alkali sulphate solution is electrolytically decomposed into a nalkali hydroxide solution and sulphuric acid. The alkali solution is used as such, or is changed by means of hydrogen sulphide or sulphur dioxide, for use in the cooking of the cellulose raw materials (food). After the completion of the cooking and after the separation of the cellulose, the sulphuric acid in the cooking liquor is led away in order to be able to recover and reconvert the alkali compounds contained in the cooking liquor back to alkali sulphate.—J. F. O.

Kraft-Simulating Pulp. George A. Richter assignor to Brown Co. U. S. pat. 1,792,510, (Feb. 17, 1931).—Wood chips are digested by heating under pressure in an acid sulphite liquor in which the free sulphur dioxide and combined sulphite dioxide are in approximately equal proportion (3 to 4 per cent each), the pulp is separated from the digesting liquor and is further digested in an alkaline cooking liquor.—A. P.-C.

Hot Acid Recovery in Sulphite Manufacture. H. Lundberg. Paper Trade J. 92, No. 20: 53-54 (May 14, 1931).—A brief discussion of the merits of the Chemipulp process, which are claimed to be: higher plant efficiency through decrease in boiler peak-load draw resulting in increased steam plant efficiency and capacity; increased production and yield owing to saving in time and better penetration resulting from the use of hot acid at the start of the cook; reduced consumption of steam, lime, sulphur and wood and lower screenings. The following figures were obtained in an Eastern mill in the course of commercial-scale operation before and after installation of the Chemipulp process: sulphur per ton 321.0, 209.7 lbs.; lime per ton 191.3, 172.9 lbs.; wood per ton 1.731, 1.55 cords.—A. P.-C.

Paulson Acid Absorber. W. L. McGabe and W. H. Swanson. Technical Association Papers, XIV, 263-265, (May 1931); Paper Trade J. 92, No. 26: 48-50 (June 25, 1931).—The principles of gas absorption are analyzed as applied to sulphite acid preparation. The Paulson acid absorbed is described and shown to be a sound application of gas absorption principles. It is compared with the limestone tower system, and the relative merits of the two systems are brought out.—A. P.-C.

Problems Involved in the Use of Iron Pyrites in Sulphite Pulp Manufacture. Horace Freeman. Paper Trade J. 92, No. 24: 85-86, (June 11, 1931); Paper Mill 54, No. 25: 16, 18, (June 20, 1931).—A brief description is given of the Freeman system of burning pyrites for the production of sulphur dioxide suitable for the manufacture of sulphite acid, together with performance figures obtained in the operation of the commercial plant installed at the St. Maurice Division of Canada Power and Paper Corp., Cap de la Madeline, Que.—A. P.-C.

Practical Sidelights on Digester Linings. A. F. Richter. Paper Trade J. 92, No. 21: 45-47, (May 21, 1931); Paper Mill 54, No. 23: 20, 40, (June 6, 1931); Pulp Paper Mag. Can. 31, 763, (June 25, 1931).—A general discussion of the requirements of sulphite digester linings, of their installation, testing and care.—A. P.-C.

Importance of Bisulphite Ion Concentration in the Sulphite Cooking Process. Erik Hägglund. Paper Industry 13, 511515, 518, (July, 1931).—A high base content of the cooking acid was found to increase both the yield and the quality of the pulp. Any increase of the base content brings with it a strong breaking down of the sugar in the cooking liquor through oxidation. Contrary to expectations, on increasing the strength of the cooking acid to twice that ordinarily used there was an increase of 5 to 10 per cent in the yield of deliberate pulp, calculated on the oven-dry weight of the wood; this is due to the fact that the speed of sulphonation under these conditions is comparatively greater than that of hydrolyzation. Use of such strong liquors would necesitate cooking at much higher pressures; and it is doubtful whether it would be profitable to change over to digesters different from those which are now in use.—A. P.-C.

Forced Circulation System for Sulphite Process. R. W. Hovey and A. D. Merrill. Technical Association Papers, XIV, 205-206, (May, 1931); Paper Trade J. 93, No. 2, 37-38, (July 9, 1931).—A satisfactory circulation can be obtained by pumping liquor out of the top of the digester and back into the bottom near the top of the cone. Nickel chromium steel has been found suitable for the circulating equipment, there being very little upkeep as compared with copper or bronze. It is preferable to provide a number of suction and discharge nozzles equally spaced around the digester, the exact number depending on the size of the di-

gester. Proper circulation results in more uniform pulp, higher yield, lower screenings, reduced cooking time, steam consumption and bleach consumption, and higher Mullen and folding tests It is suggested that the next development in direct steaming methods will be the combination of forced circulation, chip packing devices and the Chemipulp process of cooking.—A. P.-C.

Temperature Control in Cooking Sulphite Pulp. S. E. Tomczak. Paper Mill 54, No. 21, 16-20 (May 23, 1931).—The most satisfactory way of controlling temperature in cooking sulphite pulp and of duplicating predetermined temperature curves has been found to be by controlling the rate of steaming by means of flow meters. The results obtained in this way at the Flambeau mill are discussed and illustrated by means of temperature charts and steam-flow charts obtained in the course of actual mill operations.—A. P.-C.

Burning Waste Sulphite Liquor in Boiler Furnaces. J. Hauser Chem. App. 18, No. 12, 13-5-137, (June 25, 1931).—Different experiments for solving the technical problems are described; special reference is made to the system of liquor burning by means of Nubilose nozzles. The economics are discussed.—C. J. W.

Chlorine Process

Pulping With Chlorine. I. Pulping Bagasse. J. Kawamura. J. Soc. Chem. Ind. (Japan) 33 (Supp. Binding), 392-395 (Oct., 1930). Air-dry bagasse contained moisture 12.55 per cent, benzene extract 0.94 per cent, alcohol extract 1.99 per cent, water extract 2.84 per cent, 1 per cent caustic soda soluble (hot) 29.0 per cent. The alkali-extracted residue contained 3.5 per cent ash, 22.3 per cent lignin, 43.4 per cent Cross and Bevan cellulose and 27.4 per cent pentosans. The cellulose contained 69.6 per cent alpha-cellulose and 9.3 per cent pentosana. Bagasse after extraction with 0.5, 1.0 and 2.0 per cent caustic soda was chlorinated at about 50 per cent consistency, the change in yield, lignin, pentosan and ash being followed. The more drastic the alkaline pre-treatment, the lower were the yield and lignin content for an equal chlorine consumption. The pentosan content remained fairly constant at 31 to 33 per cent of the chlorinated material. Of this, one-half was removed by treating for 12 hours with 10 per cent caustic soda, and 7 per cent cellulose was likewise removed.—A. P.-C.

Pulping With Chlorine. II. Reactions of Chlorine. I. J. Kawamura. J. Soc. Chem. Ind. (Japan) 33 (Supp. Binding), 396-398 (Oct., 1930).—The ratio of chlorine as hydrochloric acid to organically combined chlorine formed in chlorinating lignocelluloses has been variously reported from 1:1.3 to 1:0.4. The author extracted bamboo with alcohol-benzene mixture and 1 per cent caustic soda, chlorinated, washed and extracted the residue three times with 1 per cent caustic soda. Hydrochloric acid was determined in the wash water, after expeling free chlorine, while organically combined chlorine was determined by heating the caustic soda extract at 250 deg. C. and determining as sodium chloride. The ratio of acid to organically combined chlorine was 1:04.—A. P.-C.

Pulping With Chlorine. III. Reactions of Chlorine. 2. J. Kawamura. J. Soc. Chem. Ind. (Japan) 34 (Supp. Binding), 62-64 (Feb., 1931).—Results similar to those reported above for bamboo were obtained with bagasse. When a large excess of chlorine was alowed to act on the bagasse for a long time, the ratio of hydrochloric acid to organic chlorides was slightly increased, indicating an oxidation.—A.P.C.

Effecting the Desodorization, Bleaching and Sterilization of Fibrous Materials Such as Sawdust. Frederick W. Broderick. U. S. pat. 1,792,805, (Feb. 17, 1931).—The material is moistened with a dilute sodium carbonate solution, heated to about 38 deg. C., and treated with chlorine gas so that the latter reacts with the sodium carbonate present and forms hypochlorous acid directly on the material, which is washed and dried. An apparatus for carrying out the proces is specified.—A. P. C.

Preventing Waste of Ray Cells and Carbohydrates. George J. Ritter, R. M. Seborg and F. A. Simmonds. Pulp Paper Mag. Can. 31. 489, 706, 708 (June 4, 1931).—A study of the effect of processing, by means of a pebble mill, on the strength-producing properties of a pulp prepared by the chlorination process led to the following conclusions: (1) A yield of 58 per cent of desirable paper making material can be obtained by chlorination of white spruce. (3) Cellulose material isolated by the chlorination process contains a high proportion of the ray cells originally present in the wood. (3) The presence of ray cells and the easily hydrolysed carbohydrates appears to have no deleterious effect on the strength-producing properties of the pulp. (4) Pulps containing a high ray-cell content and the easily hydrolyzed carbohydrates are more easily "hydrated" by pebble-mill treatment than pulps prepared by the sulphite process. Such a pulp is deemed suitable for the production of greaseproof and glassine papers. (5) Pebble-mill treatment destroys a small percentage of the ray cells.—A. P.-C.

Lime and Limestone in the Pulp and Paper Industry. O. L. Cook. Technical Association Papers XIV, 202-205 (May, 1931); Paper Trade J. 92, No. 17, 55-58 (April 23, 1931).—An outline of the economics of lime relative to the paper industry, indicating that milk of lime systems are increasing in popularity. Data are given concerning transportation, storage and uses of lime.—A. P.-C.

Manufacture and Uses of Lime. K. M. Nahikian. Paper Mill 54, No. 27, 16-17 (July 4, 1921).—A brief outline of the manufacture of lime and of its uses in the pulp and paper industry (sulphite and soda pulp, caustic soda for rag boiling, bleach liquor.—A. P.-C.

Alkaline Processes

Production of Esparto Tow. C. de Neyman. Chimie et Industrie 25, 1078-1080 (May, 1931).—An outline of the results obtained over ten years ago in the laboratories of the Sociéte Cellulose et Papiers in developing a process suitable for the production of esparto tow in Algeria under conditions of water scarcity and difficulty in obtaining supplies. The process finally evolved consists in cooking with 10 per cent milk of lime (about 600 l. per 100 kg. of grass) at 100 deg. C., draining off the cooking liquor, making up to its original volume and adding lime to a total of 10 per cent, the same liquor being re-used indefinitely after being brought up to the original volume and fortified with lime. The pulp is washed on the counter-current system so as to use as little water as possible. Time of cooking with fresh milk of lime is about three and a half hours, and increases to four and a half hours when the composition of the liquor has been stabilized after a sufficient number of cooks. The time can be reduced to two or three hours for the first cook and three and a half hours in the stabilized liquor by using 15 per cent instead of 10 per cent of lime. Cooking can be replaced by maceration for four to eight days at atmospheric temperature in shallow tanks, preferably covered with glass to utilize the sun's heat to better advantage. Salt water can be used for preparing the cooking liquor, but with slight modification of the amount of lime and the time of cooking (or maceration). Use of soda ash instead of lime did not give satisfactory results. Use of a 4 to 5 per cent caustic soda solution gave a softer and more silky tow than lime. Black liquor from pulp mills can be used, either as such (in which case only one, or at most two cooks can be made in the same liquor), or after adding 5 to 10 per cent of lime (in which case several cooks can be carried out in the same liquor by making up to the original volume and adding the required amount of lime each time). The yield in these various tests was 70 to 80 per cent. The mechanical treatment after cooking may be similar to, but somewhat milder than that at present used in Algeria for the raw grass; or it may consist in crushing between two cylinders rotating in opposite directions followed by a carding similar to that used for raw wool.—A. P.-C.

Treating Bagasse Fibre for the Producing of Paper Pulp. Ernest C. H. Valet assignor to Cellulosa Hemmer Valet, S. A. U. S. pat. 1,792,202, (Feb. 10, 1931).—In order to render bagasse fibers suitable for paper manufacture, etc., they are treated with

a clear saturated solution of lime and there is subsequently added a solution containing a sulphite such as sodium sulphite, and the fibers are then treated in a solution of caustic soda or potash and a sulphite and are subsequently washed in a soap solution.—A. P.-C.

Production of Bleached Pulp. Mead Pulp and Paper Co. Brit. pat. 339,559, (Aug. 28, 1929).—Material such as wood, straw, fibrous grasses and the like is used for the preparation of a free pulp of high strength, good color and clay-carrying properties, by first subjecting the material to an incomplete chemical digestion (suitably for 1 to 2 hours at 125 deg. C. and then at 160 deg to 180 deg. C. for 1 to 4 hours with addition of carbon dioxide in a solution of alkali metal sulphate and a sodium bisulphite tartrate, citrate, borate or oxalate) while maintaining substantial neutrality of the cooking liquor, and then subjecting the material to a limited chlorination treatment while diluted and subsequently to a stronger chlorination after thickening. The process is especially suitable for treating waste wood from furniture factories. Apparatus and various details of procedure are described.

Bleached Cellulose from Materials Such as Wood. Erik Hägglund. U. S. pat. 1,792,009, (Feb. 10, 1931).—Raw material such as beech wood is partly decomposed by boiling with alkali and the partly decomposed material is then treated in aqueous suspension with chlorine for a time sufficient to impart a uniformly brown color to the material, and after this, decomposition is completed by addition of hypochlorite, by which intermediate lower chlorine-containing acids are formed which change the color from brown to yellowish white; the material is then washed and subsequently further bleached with calcium hypochlorite.—A. P.-C.

Production Wood Pulp. Clifford E. Peterson assignor to The Champion Fibre Co. U. S. pat. 1,792,703, (Feb. 17, 1931).—Wood chips are digested in relatively dilute alkaline cooking liquor such as caustic soda and sodium sulphite solution with continuous withdrawal of liquor from the bottom of the body of liquor and chips and continuous addition of the withdrawn liquor to the top of the same body; the temperature of the materials is raised to the desired cooking temperature by introducing steam directly into the lower portion of the body of materials, and the cooking temperature is thereafter maintained by indirect heating of the circulated liquid. The apparatus for carrying out the process is prescribed.—A.P.-C.

Process for the Production of Chemical Wood Pulp. George A. Richter assignor to The Brown Co. Can. pat. 309,867, (March 31, 1931).—Raw cellulose material is cooked in ammoniated water to dissolve a portion of its incrusting material and is then cooked in a liquor containing both caustic soda and sodium sulphide to effect fiber liberation.—A. P.-C.

Production of Bleached Cellulose. Bernardino Oglietti. Fr. pat 45, 697,228, (June 11, 1930).—Cellulose is extracted from vegetable materials, particularly waste wood by submitting the material to a treatment with aqueous caustic soda or potash of 3 to 10 per cent concentration and in amount of 3 to 6 parts by weight to 1 part of material for 5 to 12 hours at 100 to 160 deg. C. The material is afterward treated with strong mineral acids or by the wash waters from a previous chlorination and then chlorinated with chlorine gas.—A.P.-C.

Wood Pulping Processes. Linn Bradley and Edward P. McKeefe assignors to Bradley-McKeefe Corp. U. S. pats. 1,795,754 to 1,795,756, March 10, 1931.—*No. 1,795,754*—Wood is digested in a cooking liquor containing most of its soda in the form of sodium sulphite; the residual liquor is subjected to a treatment including a reducing furnacing operation to yield a product containing sodium carbonate and a relatively large amount of sodium sulphide; and the sodium sulphide thus formed is utilized in an alkaline cooking liquor to cook an additional quantity of wood. Residual liquor from this second cooking operation is subjected to a furnacing to yield a product containing sodium carbonate and a less proportion of sodium sulphide than was present in the alkaline cooking liquor, and the furnace product is subjected to a sulphiting to produce a cooking liquor containing a quantity of sodium sulphite at least equivalent to any sodium thiosulphate present; and the cycle is repeated by use of the last-mentioned cooking liquor in the first stage of the process. *No. 1,795,755* relates to a cyclic process in which one lot of wood is cooked in a liquor containing sulphur dioxide and sodium bicarbonate and another lot of wood is cooked in a liquor containing caustic soda and a less quantity of sodium sulphide, residual liquors from these two operations being mixed and the suspended matter separated. This is followed by addition of a sodium compound such as caustic soda capable of redissolving remaining suspended organic material, concentration, treatment of a portion of the concentrated liquor by a reducing furnacing operation to form sodium carbonate and a considerable amount of sodium sulphide, treatment of another portion of the liquor by furnacing to produce mainly sodium carbonate without much sodium sulphide, forming separate liquors from these two furnace products, causticizing the liquor containing the greater proportion of sodium sulphide to form a cooking liquor containing caustic soda and sodium sulphide, and subjecting the other liquor to treatment to form a cooking liquor containing sodium bisulphite and sulphur dioxide and not containing any objectionable quantity of sodium thiosulphate. No. 1,795,756 relates to a generally similar process in which, however, the wood cooked in alkali is treated with a larger proportion of sodium sulphide than caustic soda when freshly charged into the digester.—A.P.-C.

Residual Liquors from the Manufacture of Cellulose. Erik L. Rinman. Fr. pat. 699,605, (July 16, 1930).—The liquors are alkalinized, in view of their dry distillation, with oxides or hydroxides of barium or strontium, if desired, in combination with a neutral substance such as powdered coal. Barium peroxide is added to transform sulphur into sulphate. In the alkalinization, oxides or hydroxides of calcium, magnesium, aluminum, zinc or iron are also added.—A. P.-C.

Continuous Causticizing by the Lime-Soda Process. R. F. Stewart and R. J. Venn. Paper Maker & Brit. Paper Trade J. 81, No. 5, clii-clv (May 1, 1931); World's Paper Trade Rev. 95, 1450, 1452, 1502-1508 (April 24, 1931); Paper Makers' Monthly J. 69, 160-164 (April 15, 1931).—A brief description of the original application of the machines which are, with suitable modifications, employed today in continuous causticizing, together with a brief discussion of the fundamentals underlying the continuous agitation settlement and counter-current washing of suspensions and sludges.—A. P.-C.

Soda Recovery. M. Rouveyre. Papier 34, 277-282 (March, 1931).—A discussion of the advantages of the use of a fuel oil burner for starting up the rotary furnace, or regulating its operation when disturbed, in soda and sulphate black liquor recovery.—A.P.-C.

Lime Recovery. Ralph Reid. Anacortes, Wash. Paper Trade J. 92, No. 22, 35 (May 28, 1931).—A brief description of the system in use at the Anacortes kraft mill, where a 100 per cent lime-recovery system (except for unavoidable process losses) is in successful use.—A.P.-C.

Liberating Wood Fiber. George A. Richter and Milton O. Schur assignors to Brown Co. Can. pat. 311,482, (May 19, 1931). —Chipped wood is digested under pressure and at elevated temperature in an alkaline liquor containing a fatty acid glyceride and sufficient caustic soda to saponify the glycerine and to effect a liberation of the wood fiber.—A.P.-C.

Treating Black Liquor Formed in the Soda Process. Erik Hägglund. U. S. pat. 1, 795, 557, (March 10, 1931).—The liquor is subjected to a heat and pressure treatment to precipitate most of the organic substances present as carbonaceous and pitchy material. After separation of the liquor from the precipitate thus formed, it is causticized (the acetate content being left

substantially unchanged) and concentrated, and a portion of the sodium acetate content is crystallized out. Another portion of the causticized liquor is used to increase the alkalinity of the black liquor, and a further portion is used to act upon pulp-forming fibrous material; crystallized sodium acetate and volatile products are recovered. An arrangement of apparatus is described.—A.P.-C.

Some Notes on the Recovery of Soda. J. A. Walker. Proc. Tech. Sect. Paper Makers' Assocn. Gr. Brit. Ireland 11, Pt. 1, 186-202 (1930).—A good recovery of soda can be obtained only if an adequate proportion of black liquor is forthcoming at a strength and volume which can be efficiently dealt with. The factors affecting this are discussed. The black liquor must be reduced to such a consistency as will permit a constant combustion in the rotary. The factors on which the efficiency of the evaporator depend are discussed. Troubles which may arise in the system are described. The rotary is discussed. The causticizing process is dealt with in some detail, and strict control is urged.—A.P.-C.

Furnace for the Treatment of Black Liquor. Fernando Falla assignor to Edge Moor Iron Co. U. S. pat. 1,794,006, (Feb. 24, 1931).—A steam boiler is operated by the furnace gases, and cooling gases are supplied to the boiler space at a point beyond the inlet of the furnace gases so that the furnace gases will be cooled to an extent sufficient to precipitate entrained "chemical ash" from them.—A.P.-C.

Treating Black Liquor. David D. Peebles assignor to Peebles Processes, Inc. U. S. pat. 1,797,585, (March 24, 1931).—The liquor is dehydrated to a high concentration by continuously circulating the heated liquor through a closed expansion chamber while simultaneously continuously removing evolved vapor from the chamber, and the concentrated waste liquor is burned in a furnace with gases evolved from the chamber.—A.P.-C.

Treating Waste Liquor from Chemical Pulp Manufacturer. Linn Bradley and Edward P. McKeefe assignors to Bradley-McKeefe Corp. U. S. pat. 1,797,678, (March 24, 1931).—The inorganic content with admixed organic matter of a concentrated mixture of the waste residual liquor resulting from the digestion of cellulosic material such as wood chips in a solution of sodium-sulphur salts (containing most of the sodium in the form of a sulphite of sodium) and the residual liquor resulting from the digestion of cellulosic material in an alkaline solution containing sodium compounds (the major portion of which are sulphur-free, such as caustic soda) is subjected to furnacing under reducing conditions to produce a furnace product containing the sodium compounds mainly as sodium carbonate and sodium sulphide, and the resulting sodium compounds are treated to produce an alkaline cooking liquor for further use as a digesting agent for cellulosic material.—A.P.-C.

Process for the Treatment of Liquid Rosin for the Purpose of Separating it into its Components, Pitch, Rosin and Fatty Acids and Other Substances. L. Bjorkgren, Stockholm. Swed. pat. 70,794 (Sept. 22, 1927).—A continuously flowing stream of liquid rosin, for the reason of constant concentration, is subjected to a continuous distillation of rosin and fatty acids by the action of steam.—J.F.O.

Mechanical Process

Critical Observations on the Grinding of Wood. O. Herdey, Zellstoff Papier 11, No. 6, 350-353 (June, 1931).—In multiple press high powered grinders, large supply magazines are permissable to keep the wood pile in place. With continuous grinders with a single magazine it is necessary to pile the wood so as to give it a uniform density and rate of feed. A considerable part of the power is required to overcome the resistance of wedged in pieces of wood. The quality of the stock is improved with increase in temperature, but the yield decreases. Grinding temperatures which are too high ruin the texture of the stone and make its operation dangerous. The temperature of the stock leaving the stone should be at least 50 to 60 deg. C. Also of importance is the sharpness of the particles, uniform and porous filler for the particles, the sharpening of the stone and the peripheral speed of the stone. The normal peripheral speed is from 18 to 21 meters per second. There is no increase in production if this speed is increased. The microscope, freeness and the tearing length are the most suitable tests. The stock must be screened several times before it is tested, and is generally separated into wood flour, long and short fibers. A method for testing the de-watering properties which does not change the freeness, is desired.—J.F.O.

Device for the Regulation of the Feed to a Wood Grinder, in Which the Wood Being Ground Is Pressed by Mechanical Means Onto the Grindstone. Linke-Hofmann-Busch-Werke, Fullnerwerk. Ger. pat. 508,075 (Feb. 5, 1925).—A liquid, steam or gas control regulator is coupled with the power drive of the wood feed mechanism. The primary part of the regulator is driven in harmony with the shaft of the grind stone and driven directly by the secondary part which is coupled with the feed mechanism and without any intermediate connection of a throttling valve. The feeding mechanism is connected with the runner of the liquid control regulator.—J.F.O.

Electrical Feed Drive in the Leonard Connection, with Quick Regulation for Wood Grinders with a Mechanical Periodic Feed of the Wood. Allgemeine Elektricitats Ges. Berlin. Aust. pat. 120,332 (July 15, 1930).—The magnetic coil of the vibrating relay of the quick acting regulator, which regulates the tension on the main generator by influencing the field, is excited by a tension which is influenced by the field winding of the main generator.—J.F.O.

Method for the Regulation of Installations of Steam Power Machines with Wood Grinder Drives. Akt. Ges. Brown Boveri & Cie, Baden, Switzerland. Ger. pat. 506,344 (March 10, 1925).—The method concerns itself with an installation in which the boilers produce steam for other purposes besides the wood grinders. It is characterized by the pressure of the press of the grinders or the control of the steam power machines or both together being directly dependent upon the pressure of the boilers. According to claim number 2, the regulation of the boilers follows simultaneously after load of steam power machine or grinder.—J.F.O.

Process for the Manufacture and Treatment of Ground Wood and Other Fibrous Substances. Konigsberger Zellstoff-Fabriken und Chemischewerke, and Koholyt Akt. Ges. Ger. pat. 504,705 (June 24, 1928).—The color of the ground wood depends to a great extent upon the hydrogen ion concentration content of the mill water. The brightening of this color can be effected by chemical action in various simple ways, by so fixing the hydrogen ion concentration of the mill water so that it is at the turning point of the methyl orange indicator toward the acid side. A quantity of acid or acid salt or acid splitting salt is added for this purpose, the quantity depending on the temporary hardness of the water.—J.F.O.

Production of Ground Wood. Raymond S. Hatch, Robert B. Wolf and Raymond P. Hill. U. S. pat. 1,794,174 (Feb. 24, 1931).—Wood is ground to produce short-fibered ground wood pulp, slivers are separated from the pulp, the slivers are subjected to a softening and defibering treatment with a suitable chemical agent, and the resulting pulp is mixed with the short-fibered ground wood.—A.P.-C.

Device for the Regulation of the Load in Wood Grinders. AEG-Union Elektrizitats Gesellschaft, Vienna. Aut. pat. 120,684 (Aug. 15, 1930).—The regulation of the feed of the wood against the stone in a multiple press grinder takes place through an electric quick acting regulator which is controlled by the variations in the oil pressure in the lower supply basin of the grinder shaft.—J.F.O.

The Carter Paper Stiffness Tester

By E. C. Carter[1]

Stiffness is a characteristic of paper often talked about and although of vital importance, it is seldom measured. Modern business requires the use of paper in many special machines for the office, store or factory and, in many cases, the successful functioning of the device depends largely on paper of the proper stiffness.

The stiffness test for paper was developed in the research laboratories of the National Cash Register Co. as a means of controlling the quality of receipt paper.

With the use of the tester the stiffness of the paper was no longer a matter of "feel" and "remembrance" but an actual test and record. The use of the test was then applied to different kinds of paper and proved to be of practical value in reducing feeding troubles in various office appliances and printing presses.

Stiffness is desirable if not absolutely necessary in index cards, ledger sheets, playing cards and many other articles made from paper for which the tester is now being used. This instrument measures the stiffness of paper by indicating the load in grams required to bend the test specimen through an angle of ninety degrees.

Fig. 1. shows the specimen which is one and one half inches wide and three inches long, held in the paper clamp. A wire hook connects the other end of the specimen to the pendulum. The arm on which the clamp is mounted swings on the same center as the

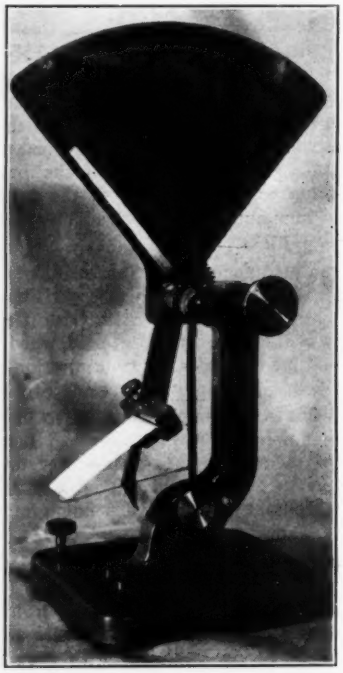


FIG. 1

pendulum and is raised by turning the large knob at the right of the pendulum pivot.

As the clamp arm is raised the specimen lifts the pendulum and gradually flexes as the load increases. When the end of the specimen lines up with the index on the end of the clamp arm as shown in Fig. 2. the scale reading should be taken.

It will be noted that the specimen is of such proportions as to be easily produced from the customary small sample yet it is large enough for convenience in handling or filing. The width of the specimen can be reduced if necessary. The effect on the test will be in direct ratio and the results can be calculated to the standard width.

In some special cases the instrument is built to test a finished

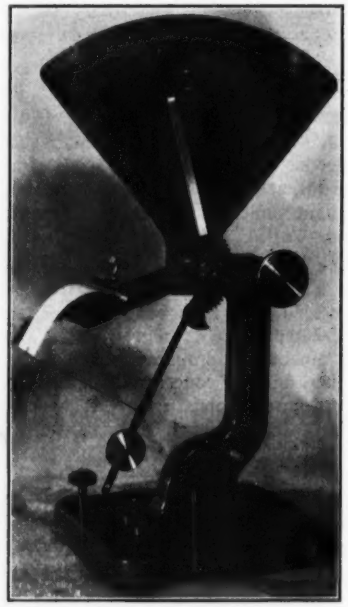


FIG. 2

product such as playing cards, where the standard card is used as the specimen.

The special uses of the tester make it valuable in production control work or for comparisons in that particular industry but, as in all other testing, tests made with the standard instrument and specimen will be of the greatest value to the paper industry.

[1] Member TAPPI, 22 Beverly Place, Dayton, Ohio.

RELATION OF SHEET PROPERTIES

(Continued from page 49)

5. The relations involved may be expressed as

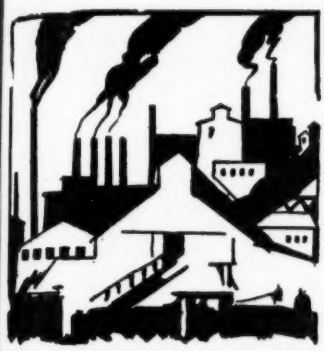
$$S = k C^n F^m$$

where k is a characteristic of the pulp that is designated "fiber strength at unit consistence," and m and n may or may not be characteristics.

6. Sheets of low basis weight, 21.5 pounds, for example, show an anomalous behavior that may be either specific or an effect of inaccuracy in thickness measurements.

7. The various effects of basis weight just noted appear to be explainable from the standpoint of the fiber arrangement, particularly the concept of orientation of fibers perpendicular to the surface of the sheet

[6] The Bursting Strength Test. Carson, F. T., and Worthington, F. V. Paper Mill 53, 136-42 (1930).



Section of the

COST DEPARTMENT

of the

American Paper and Pulp Association

Edited by T. J. Burke C. A. Director Cost Dept.

Profit Maintenance During A Depression*

By Thomas J. Burke[1]

Only a short period having been allowed for the discussion of the topic chosen for this address, I must be a man of few words like the contractor who, calling to one of his sub-contractors, new on the job, said "I am a man of few words so when I say come, and motion to you like this, you want to come right over." The sub-contractor pushed his hat on the back of his head, looked at the contractor for a minute and said, I'm a man of few words myself, so if I shake my head, it means I'm not coming."

It's not therefore necessary, for me to use up words discussing general business conditions. We will just speak of the depression. It's here and we have to live with it, and maintaining profits during a depression is, as we all know, a very difficult thing to do.

One thing in our favor is, that we are connected with an industry which makes products that are so essential to civilized communities, that the demand for our products never falls off to the extent that it does in many other industries. We have, therefore, only to keep our heads and do our best to weather the storm.

A Great Responsibility

Now we, as accountants, have a very great responsibility during depressions. That, of course, is obvious to all of you, simply because every dollar counts, and as the men in charge of the mill books and records, we have to watch the dollars. This necessitates our keeping right-up-to-date in everything touching on our work and providing the management with a great deal more information than they or we might otherwise think necessary. Co-operation for instance with the sales department and with the technical department is essential, and we must work closely with them to overcome and meet squarely the problems we all have to face.

Are all of you satisfied at present with the accounting system in use in your mill? If not, what are you doing to improve that system? This is no time "to pass the buck" and I personally feel my position keenly as head of the Cost Department of the American Paper & Pulp Association, because I honestly believe that many mills today are suffering the penalties of poor profits or red ink figures, because their accounting department is not functioning as it should, and that I as the man who should assist the head of that accounting department to improve his system, am not in as close touch with him as I should be. I therefore, make an appeal here and now to the accountants of the industry, to write me more often and more frankly about their difficulties, and thus give me a better opportunity to be of assistance to them.

The old adage that a "penny saved is a penny earned" is just as true today as ever it was, and by saving pennies we can do our share to keep out of the red. That is our great opportunity today, to seek out the places where there is waste or where savings can be effected, and to provide the data and information necessary to enable the management to make the necessary changes to effect this.

An Effective Way

In my humble opinion, there is one sound effective way by which this can be accomplished. Every mill today has some sort of cost system, but the majority of them are compiling their costs on an "as is basis." By this I mean, they are compiling their costs using the same methods they have done for many years, and past records for comparison, whereas they should change these methods to meet present-day conditions. Instead of comparing costs with past records, they should be comparing them with figures representing what the cost "should be" with the available equipment and machinery and the prevailing prices for raw materials and supplies. To do this, they must, of course, set up standards of accomplishment and the accountant must thoroughly analyze each item of expense in co-operation with the Technical Department. Only in this manner can satisfactory cost standards be built up that will stand the strain of the competitive conditions with which the Sales Department is faced.

What is definitely needed is thorough accounting control throughout, the mill that is to say, in the Purchasing, Production, Sales and Financial and Accounting departments, and the whole plan must be coordinated for effective use by the management. In developing this budget plan, we must start with the thought in mind that our objective is to make a profit and several budgets should be developed so as to reflect the per cent of profit, that may possibly be obtained at differing rates of operation.

Great Care Must Be Exercised

This is difficult, because of the variable price factor, which is now so sensitive due to over surplus capacity,

* Address before the Wisconsin Cost Division of the American Paper and Pulp Association, at Wisconsin Rapids, Wis., Sept. 19, 1931.

[1] Director, Cost Department, American Paper and Pulp Association.

so that great care has to be exercised when estimating. But difficult as it is, is it not better and sounder business to face the facts beforehand and thus to *know,* for instance that if a certain carload order is taken at a certain price, it will entail a loss instead of a profit, rather than to take the order in the hope that costs may be reduced sufficiently to avoid showing a loss? Do all your "hoping" beforehand when you are building up your standards, so that you can give facts and figures to the Sales Department that cannot be questioned.

There is a fair percentage of mills operating in this way today, and the number is slowly increasing. My chief objective in speaking to you today, is to urge any of you who are not now operating on a budget plan, to get busy at once. It is most important for our industry for as soon as 100% of the mills are working on a budget plan, cut-throat competition will be on its way out, no matter how severe the depression may be.

Here's the point. Have you ever watched a prize-fight when one of the boxers is obviously not sure of himself? If you have, you have noticed how he hesitates and receives many punches as a result. The cause of his defeat really is lack of preparation. He has not trained sufficiently and consequently is afraid of his opponent. Competition today is much like a prize-fight. We have to be prepared and this involves a thorough and pains-taking analysis of our costs, the development of standards and the setting up of a budget plan throughout the mill. I want to add, that prize-fights are fought under strict rules, which the fighters must obey, while competition is conducted under conditions not so strict. It's a life and death struggle for many and when one is fighting for one's existence, rules are overlooked.

The governing characteristic of this cut-throat competition is however "Fear" just as in the case of the fighter, and often this fear is the result of not being prepared for the business at hand. Mills are not sure of their costs and the only way to be sure is to set up standards representing what you *know* you can do, and then to fight for prices that will give you a profit on these costs. You can fight much more effectively when you know you are right, when you know the price you are asking is as low as you can possibly make it. "Fear" is eliminated, you have done everything you could do to reduce your costs. You are sure of your purchasing, production and technical departments. They have worked together so that there is no doubt of the cost figures that your accounting department has worked up. There is no doubt or fear in your mind regarding them so you are trained and ready for the fight for business at a fair price.

One executive recently was complaining that the value of the cost work, that has been done in the industry was being nullified through present competitive conditions and I want to take this opportunity of stating very frankly that, in my opinion, and in the opinion of many executives in the industry, the fact is that but for this work, competitive conditions would undoubtedly be a great deal worse than they are. I state this emphatically, because I know of mills operating at a profit today, because of shrewd business management made possible as a result of data collected and made available to the executive by the accounting department.

Just, as I believe therefore, that this is not the time for any one mill to reduce its accounting staff, so I believe this is not the time for any mill to give up its co-operative efforts toward improving the accounting procedure of the industry. The mills that really know their costs today, are not price-cutters as such. They may be fooled at times into reducing a price to meet "reported" competition, I say "reported," for only recently several cases have come to attention where such reports were proved to be absolutely untrue and apparently were ruses adopted by unscrupulous buyers to contain price recessions.

In this connection, I don't believe there is an executive in the industry who would not answer "yes" if you were to ask him if he did not prefer competition from mills, that had an adequate knowledge of what their paper cost. I think we should all doubt the business acumen of any one that answered "no."

That is why I believe that as the percentage rises of mills, that are operating on a standard-cost budget plan, so will cut-throat competition decline. The reason is fairly plain. Operating on such a plan, you can know daily, almost hourly, how you are progressing profit-wise. Many executives at present watch their bank account rather than their profit and loss account, simply because they can see the daily ebb and flow in the bank account, but not in the profit and loss account; their cost plan is not flexible enough to make this possible.

We all know "receipts" are not necessarily "income." Some of the largest concerns in the country have receipts of millions of dollars and no income at all. One-third of our own industry had receipts of over three hundred million dollars in 1928, while their losses from operations amounted to thirty-three million dollars and 1928 was a good stable business year. Does this not emphasize the vital necessity of refusing to sell paper at prices which include no profit also for striving for perfection in your accounting plan, so that you can watch your profit and loss account as closely as if necessary your bank account?

You cannot do this satisfactorily by costing on a Job Cost or Process Cost plan. You must know not only what your paper is actually costing, but what it should cost if you operate efficiently at varying rates of capacity, also what your profit may be at these rates. That is the modern trend in accounting made necessary by present-day conditions.

In order to get in step with this modern trend, the Cost Department of the American Paper and Pulp Association, at the suggestion of President S. L. Willson, has appointed a Special Committee on Uniform Accounting and Cost Procedure. This Committee has been working and already a number of tentative reports have been submitted by its sub-committees.

This work will now be pushed to completion as rapidly as is made possible by your co-operation. Fifty per cent of the difficulty experienced in carrying on work of this kind, is due to the lack of co-operation and to the necessity for writing two or three times for information to be used by the Committee.

I have endeavored in what I have said to emphasize the importance of revamping our accounting procedure, so as to render it capable of supplying the management with the essential information necessary to make possible the maintenance of profits during a depression.

In doing this revamping, we should all work together to the end, that there may evolve a Uniform Plan of Accounting Procedure, that will eventually be adopted by the industry as a whole as representing the best accounting practice.

"United we stand, divided we fall" and as we are not going to fall, the sooner we unite in agreeing that our costs shall all be compiled by the same Uniform Method, and that our prices shall be based on these costs irrespective of business conditions, the sooner we shall succeed in our efforts to maintain a profit margin during the present severe business depression.

Obituary

Harry F. Webber

[FROM OUR REGULAR CORRESPONDENT]

WATERVILLE, Me., September 21, 1931.—Harry F. Webber, treasurer and general manager of the Waterville Iron Works, Waterville, Me., died at his home in Waterville on Saturday, September 12, following an operation for acute appendicitis. Mr. Webber was widely known among executives of pulp mills as he had covered this branch of the industry for many years in the interest of his firm which was a large manufacturer of pulp mill equipment.

After graduating from Hebron Academy, Mr. Webber entered the employ of the Waterville Iron Works, founded by his grandfather, John Webber, in 1833, and which was later taken over by his father, Frank Webber, who, in conjunction with Frank Philbrick, operated the business under the name of Webber & Philbrick.

In 1910, shortly after the death of his father, the firm was incorporated as the Waterville Iron Works, at which time Mr. Webber became treasurer and general manager, the position he held until the time of his death. He was highly respected in his community by all who knew him for his genial disposition and keen sense of humor.

Mr. Webber was a member of various Masonic bodies of Waterville, a Thirty-Second Degree Mason, a member of the Kora Temple and of the Mystic Shrine. He was also a charter member of the Waterville Rotary Club.

He is survived by his wife and one daughter, five sisters, Mrs. G. W. Bartlett, Mrs. E. W. Hall and Mrs. H. H. Hayden, of Waterville and Mrs. C. E. Shannon of Philadelphia, and Mrs. E. T. Lander, of Malden, Mass.

Funeral services were held at his late home, 20 Burley street, Waterville, Me., on Monday, September 14, and interment in Pine Grove Cemetery.

Mrs. Daniel M. Hicks

Mrs. Delia V. Curran Hicks, widow of Daniel H. Hicks, founder of Daniel M. Hicks, Inc., dealers in paper mill supplies, of 200 Fifth Avenue, New York, died suddenly last Wednesday, September 30, aged 68 years, following an operation in the Peck Memorial Hospital.

Mrs. Hicks is survived by three sons, Walter R., and AlbertT., of Daniel M. Hicks, Inc., and Leonard F. Hicks, of the Costarino Trading Company; and also three daughters, Mrs. Albert C. Rutan, Mrs. Francis S. Eckel and Mrs. Dorothy Kahl.

The funeral was held from Mrs. Hicks' residence, 272 Halsey street, Brooklyn, thence to Our Lady of Victory Catholic Church. Interment was at St. John's Cemetery.

John A. Murray

John A. Murray, associated with William A. Hardy & Sons Company, of Fitchburg, Mass., as salesman for the past twenty-four years, passed away at his home in Merrimac, N. H., on Sunday, September 27, Aged 64.

Mr. Murray had been ill for several months. He was born in Rockville, July 15, 1867. He is survived by his wife, Eliza T. Murray, of Merrimac, N. H.; one daughter, Mrs. Robert E. Krudener, of Kalamazoo, Mich.; one son, J. Sims Murray, of Brookline, Mass.

Reports Business Improved

[FROM OUR REGULAR CORRESPONDENT]

CANAJOHARIE, N. Y., September 28, 1931.—The paper bag manufacturing plant of Arkell & Smith reports improved business conditions and indications are that capacity operations will be maintained for some time.

Memorial to Edmund N. Huyck

[FROM OUR REGULAR CORRESPONDENT]

RENSSELAER, N. Y., September 21, 1931.—It was announced last week that a perpetual living memorial to the late Edmund N. Huyck, president of F. C. Huyck & Sons, had been established by the widow of the deceased in the creation of the Edmund Niles Huyck Preserve Inc. The preserve is a forest tract consisting of several hundred acres where Mr. Huyck enjoyed many hunting and fishing trips besides finding relaxation from his business duties and is located on one of the choicest sites in the town of Rensselaerville. In order to perpetuate the preserve and to keep it in its natural beauty it was decided that a corporation was necessary.

The plan is understood to have been given consideration by Mr. Huyck prior to his death and that his wishes are now being carried out. The preserve is situated near his summer home and has been used for recreational purposes by the residents of the village. It takes in several bodies of water where fishing is excellent and the charter granted the corporation provides for development. It is the plans of the new organization to establish a wild game sanctuary in the tract while reforestation and forest culture will also be demonstrated. The charter provides also that the boundary lines may be extended by the acquisition of other lands. It was announced that a fund is to be set aside to finance the preserve in perpetuity.

The incorporators of the organization are Mrs. Huyck, Francis C. Huyck, Mrs. Elizabeth H. Eldridge, William F. Rice, Dr. Thomas Ordway, Mrs. Katherine H. Elmore, Winthrop P. Stevens, Harry Eldridge and Francis H. Eldridge.

Herringbone-Maag Speed Reducers

Two new double reduction Herringbone-Maag speed reducers for small electric motor drives have just been announced by W. A. Jones Foundry and Machine Company of Chicago.

The smaller of the two machines, (Number 90-D) is only 18¾ inches long and 12¾ inches wide, occupying but little more than one and a half square feet of floor space. The other machine is only slightly larger, measuring 21¾ inches long and 14 inches wide.

In design, construction and manufacture, these small reducers are the same as the new improved models of larger capacity recently announced. An extensive list of ratios is carried in stock to insure prompt deliveries.

The addition of these small machines completes the Jones line of Herringbone-Maag Speed Reducers. This, coupled with the spur gear reducers and the expanded worm gear reducer series, enables the W. A. Jones Foundry and Machine Company to render a very broad and impartial service on speed reduction problems.

Camas Mill Makes Perfect Safety Record

[FROM OUR REGULAR CORRESPONDENT]

PORTLAND, Ore., September 18, 1931.—The safety campaign of the Crown-Willamette Paper Company at Camas, Wash., showed a perfect record for the month of August and with due ceremony the white safety flag was raised to the top of the pole. M. W. Kincaid, safety superintendent, has now set a goal of 100 days without an accident with 40 days already rolled up on the safety record. During the August contest every department closed ten or fifteen minutes early at noon to listen to safety suggestions, these talks being given by G. W. Charters, Vic Gault, F. A. Drumb and M. W. Phelps.

New York Trade Jottings

Alfred Haigh, managing director of Brittains, Ltd., the well known paper manufacturers, of Leek, Staffordshire, England, who is making his annual tour in the United States and Canada, spent several days in New York recently.

* * *

The regular weekly luncheon and meeting of the Eastern Division of the Salesmen's Association of the Paper Industry was held at George's Restaurant, New York, on Tuesday. Conditions in the paper industry and the general business situation were freely discussed in an interesting and instructive session.

* * *

Japan Paper Company, of New York, has just published a beautifully printed booklet entitled "Don Stafano Merola's Paper Mill", from the biographical sketch of Philip Hackert by Johann Wolfgang Goethe. The booklet was designed by Carl Purington Rollins, translated by Dr. Auguste Frischmann, and printed on Zerkall Mould-Made Paper by the Printing Office of the Yale University Press.

* * *

R. S. Kellogg, secretary of the News Print Service Bureau, accompanied by his wife, left New York Wednesday on an extended business trip, during which he plans to visit Quebec, Montreal, Chicago and Wisconsin. Mr. Kellogg is scheduled to make an address at the Institute of Paper Chemistry, Lawrence College, Appleton, Wis., on Tuesday, October 13. He will also address the Inland Daily Press at Chicago on Wednesday, October 21, the subject of his speech being "Newspaper Circulation, Urban Populations and Literacy."

* * *

Gibson Paine, vice-president of the New York and Pennsylvania Company, who is chairman of the Paper Industries Committee of the Emergency Unemployment Relief Committee's Division of Commerce and Industry, issued a statement recently at headquarters of the committee, 29 Broadway, explaining how his division will operate in raising funds in Manhattan for the relief of acute distress resulting from unemployment in New York. During the intensive campaign a system of solicitation will become effective. Every prospect in the paper industries group, whenever possible, will be interviewed personally and a report will be made on each interview. Such efforts, while scattered city-wide, will be coordinated and carried on in a carefully systematized way.

* * *

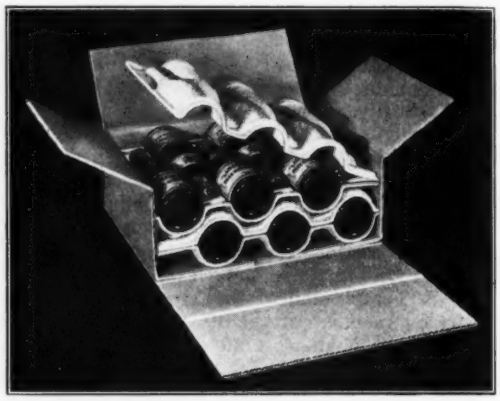
Sustaining protests of Katzenstein & Keene, New York, the United States Customs Court finds that where the uncontradicted evidence establishes that at the time of importation certain shipments of rags consisted of worn out pieces of discarded cotton clothing, fit only to be sold as paper stock, although admitted that each bale did contain a small percentage of rags of a size which might be used as wipers without further processing, said importations are of the class of rags entitled to free entry as old junk. The shipments in question were subjected to duty at the rate of 10 per cent ad valorem under Paragraph 1457, Act of 1922, as waste, not specially provided for. Judge Cline writes the court's opinion allowing free entry under Paragraph 1601.

* * *

A quota of $20,000 has been allotted to the paper and twine division in the 1931 campaign of the Federation for the Support of Jewish Philanthropic Societies of New York City, it is announced. Max Greenbaum and S. T. Baron have been named acting chairman of this division for the Business Men's Council of Federation, the money-raising unit of Federation. Unemployment and the current economic depression has taxed the resources of the Federation in its effort to alleviate the suffering more prevalent than ever.

A New Interior Packing

The Moulded Pulp Corporation, 222 West Adams street, Chicago, announces Tyte-Pack, a new interior packing. Tyte-pack trays and enclosures have cavities that conform to the shape of the bottles and are used in complemental halves, each cavity being approximately one half the thickness of the bottle, to be packed. The compactness of the pack results in saving in cost of containers, the



TYTE-PACK ENCLOSURES

elimination of individual wrappers, fillers, partitions, pads or other interior fittings, and makes for an economical achievement.

Tyte-Pack insure greater safety of merchandise. Trays and enclosures have created nests which effectively retain the bottles so as to prevent their coming in contact with each other by shifting after the box has been closed

Extensive laboratory drum tests have been made here and in Canada, also test shipments dispatched great distances, and the results have greatly exceeded expectations. The Consolidated Freight Classification already makes provisions for the use of moulded pulp trays in lieu of partitions and pads. The use of full flap Slotted cartons with openings on sides would eliminate the liner. All drum and shipment tests were made without liners.

An interesting circular may be had by addressing the company at the address mentioned.

History of Mexican Paper Industry

On the occasion of the International Press Convention, recently held in Mexico City, the San Rafael Paper Mills Company published and distributed an interesting illustrated booklet—expressly printed as a tribute of respect to the delegates who visited their up-to-date plants—describing the "History of Paper in Mexico and the Mexican Paper Industry."

The celebrated San Rafael paper mill is adequately described in one section of the booklet. This plant has eight paper making machines, of which three have great capacity, each one being able to produce 50,000 kilograms of news print paper per day. These machines were built by the Pusey & Jones Corporation of Wilmington, Del., and the Beloit Iron Works, of Beloit, Wis. The other five machines are designed to produce book paper, wrapping paper, magazine, light board, rotogravure, etc.

Union Screen Plate Company

Fitchburg, Mass., U. S. A. Lennoxville, P. Q., Canada

UNION BRONZE

SCREEN PLATES FOR FLAT SCREENS
6 SLOTS—5 SLOTS—4½ SLOTS—4 SLOTS—PER INCH

Old Plates Reclosed and Re-cut to Accurate Gauge
Rolled Phosphor Bronze and Copper Plates for Rotary Screens

Sole Manufacturers of the Union Witham Screen Plate Vat and Fastener

There is one spot in your plant where costs can be cut without impairing the quality of your product. When you reduce the cost of steam you are making a saving in one of the biggest factors in the cost of paper. Modern Taylor Stokers make tremendous savings. We know of one company that reduced its coal bill 40% by revamping their old boiler units and installing new Taylor Stokers. Savings of $2,000 a month and upward are not unusual as a result of such revamping jobs. Ask us about savings that can be made in *your* plant.

AMERICAN ENGINEERING CO.
2401 Aramingo Ave. Philadelphia, Pa.

WOOD PULP
AGENTS

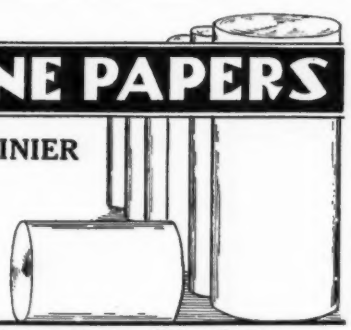
PRICE & PIERCE, Ltd.,

60 EAST 42nd ST.
NEW YORK

FINE FELTS for FINE PAPERS

FOR CYLINDER AND FOURDRINIER MACHINES

Let us solve your FELT Problems.



THE WATERBURY FELT CO.
SKANEATELES FALLS, N.Y.

Imports of Paper and Paper Stock

(Continued from page 60)

BALTIMORE IMPORTS

WEEK ENDING OCTOBER 3, 1931

Castle & Overton Inc., Wytheville, Rotterdam, 1730 bls. wood pulp, 275 tons.
Congoleum Nairn Co., Wytheville, Rotterdam, 418 bls. dark cottons.

HAMPTON ROADS IMPORTS

WEEK ENDING OCTOBER 3, 1931

Castle & Overton Inc., Wytheville, Rotterdam, 800 bls. wood pulp, 128 tons.

SAVANNAH IMPORTS

WEEK ENDING OCTOBER 3, 1931

E. J. Keller Co. Inc., Sanyo Maru, ——, 225 bls. tares.
——, Sanyo Maru, ——, 225 bls. bagging.

PHILADELPHIA IMPORTS

WEEK ENDING OCTOBER 3, 1931

Castle & Overton Inc., Lagaholm, Viborg, 1815 bls. dry cellulose.
Lagerloef Trading Co., Lagaholm, Viborg, 6396 bls. sulphite.
H. Reeve Angel & Co. Inc., Lagaholm, Kotka, 69 rolls news print.
Lancaster News, Lagaholm, Kotka, 52 rolls news print.
Union Waste Co., Sanyo Maru, Kobe, 30 bls. rags.
Central Hanover Bank & Trust Co., Wytheville, Rotterdam, 66 bls. rags.
National Vulcanized Fibre Co., Wytheville, Rotterdam, 61 bls. rags.
E. J. Keller Co. Inc., Wytheville, ——, 136 bls. rags.
H. W. T. Mali, Atago, Osaka, 125 bls. rags.
Castle & Overton Inc., Collamer, Bordeaux, 231 bls. rags.
H. G. Lichtenstein, Collamer, Bordeaux, 565 bls. rags.
J. Anderson & Co., Maria, Trieste, 1300 bls. wood pulp.

BOSTON IMPORTS

WEEK ENDING OCTOBER 3, 1931

W. A. Feinberg & Son, Sanyo Maru, Kobe, 50 bls. rags.
Bulkley Dunton & Co., Brosund, ——, 1870 bls. wood pulp.
Perkins Goodwin & Co., Brosund, Wifstavarf, 250 bls. sulphite.
J. Anderson & Co., Brosund, Hernosand, 1200 bls. sulphite, 200 tons.
Perkins Goodwin & Co., Brosund, Norrsundet, 7250 bls. sulphate, 1450 tons.
Castle & Overton Inc., Wytheville, Rotterdam, 1018 bls. wood pulp, 164 tons.
Bulkley Dunton & Co., Ditmar Koel, ——, 1025 bls. wood pulp.
Johaneson Wales & Sparre Inc., Ditmar Koel, Sundsvall, 2415 bls. sulphite, 418 tons; 320 bls. chemical pulp, 64 tons.
Perkins Goodwin & Co., Ditmar Koel, Sundsvall, 1125 bls. sulphite, 225 tons.
Perkins Goodwin & Co., Ditmar Koel, Munksund, 3000 bls. sulphate, 500 tons.
——, Ditmar Koel, Hernosand, 5550 bls. sulphite, 925 tons; 600 bls. sulphate, 100 tons.
International Purchasing Co., Marengo, Hull, 437 coils old rope; 150 bls. yarn.
Atkinson Haserick & Co., Pr. Adams, Genoa, 6 cs. paper.

NORFOLK IMPORTS

WEEK ENDING OCTOBER 3, 1931

Castle & Overton Inc., Lagaholm, Viborg, 317 bls. dry cellulose.
Lagerloef Trading Co., Lagaholm, Viborg, 2747 bls. sulphite; 5994 bls. sulphate.
Old Dominion Paper Co. Inc., Lagaholm, Kotka, 99 rolls news print.
Virginia Paper Co., Inc., Lagaholm, Kotka, 166 bls. news print.
Lagerloef Trading Co., Lagaholm, Kotka, 42 rolls wood pulp boards; 718 bls. sulphite; 443 bls. sulphate.
Lagerloef Trading Co., Lagaholm, Tolkis, 4662 bls. sulphite.
J. Richardson & Co., Bristol City, Fowey, 200 tons, 15 cwt. china clay.
Bank of Montreal, Cornerbrook, Cornerbrook, 6683 rolls news print.

Goes With Biggs Boiler Works

Alfred C. Fickes, for the past eight years general sales manager of the Lancaster Iron Works, Lancaster, Pa., and well known in steel plate fabricating lines, recently became associated with The Biggs Boiler Works Company, of Akron, Ohio, as sales manager. He has been identified with the steel industry for many years, as a mechanical and structural engineer with the Philadelphia and Reading Coal and Iron Company, Lehigh Coal and Navigation Company, Southern Pipe Line Company, Bethlehem Steel Company, and McClintic-Marshall Construction Company, before entering the service of the Lancaster Iron Works in 1915 as Chief Engineer.

Paper Firms Use Barge Canal

[FROM OUR REGULAR CORRESPONDENT]

FORT EDWARD, N. Y., September 28, 1931.—The task of loading a vessel with wrapping paper from the local plant of the International Paper Company has been under way at the barge canal terminal here for several days, the shipment being destined for the Metropolis. A portion of the product is also being conveyed to the vessel from the Corinth plant of the company with the aid of motor trucks. The barge canal route is now being used extensively by paper mills in this section in shipping their products and it is understood to have more advantages than shipments by railway.

Safety Congress and Exposition

Much interest is centering around the coming twentieth annual Safety Congress and Exposition which is to be held at the Stevens Hotel, Chicago, October 12 to 16. Paper mills in Chicago, nearby Wisconsin and Michigan and other parts of the Middle West have always taken a keen interest in the prevention of accidents and the success of safety schools in the mill territory north and west of Chicago is well known to the paper trade. Paper manufacturers will again be represented at the Congress and at the Exposition as a part of the program will feature prevention methods in their particular field.

Byron Weston Papers

Although titled a catalog and price list of Byron Weston Papers, it is actually a reference on fine business and record papers,—a helpful handbook that will be retained because of the useful information it contains.

Appropriate uses are suggested for each paper in the Ledger Group—Weston's Record, Defiance Ledger, Waverly, Flexo and Centennial, and for those made especially for mechanical accounting—Typacount and Weston's Machine Posting and Index. Defiance Bond and Weston's Boxed Papers are fully described. Tables showing sizes, weights and colors of each of the papers accompany each section.

In addition, the booklet contains a Dictionary of Paper Terms, Trade Customs and general information which every user of paper will find useful. Purchasing agents and office managers can use this booklet to advantage because it will save their time in quickly arriving at the proper brand, size, weight and color of Byron Weston Papers to use in each particular printed piece or form.

It is in the handy pocket size—commending itself particularly to use by sales representatives of paper houses, printers, lithographers, engravers and stationers. Copies may be obtained from Byron Weston Company, Dalton, Mass. or from distributors of Weston's Papers.

Farrel-Birmingham Changes

The Farrel-Birmingham Company, Inc., of Ansonia, Conn., has opened a new office in Chicago, 1059 First National Bank Building, Monroe and Clark streets. The office is in charge of Harry Temporal, who was transferred from the Akron office. Mr. Temporal has been a sales representative of the company for 21 years, having first joined the Farrel Foundry and Machine Company at Ansonia in 1910. In 1922 he was transferred to the Cleveland office and in 1928 to the Akron office when the Cleveland and Akron offices were consolidated. The Akron office, in charge of Andrew Hale, has been removed from the United Building to 2710 Central Depositors Bank Building.

Every Stebbins lining carries a Bonded Guarantee.

STEBBINS
Engineering & Manufacturing Company

WATERTOWN NEW YORK

SEATTLE WASHINGTON

STEP AHEAD.. . . . *with*

SILICATE OF SODA

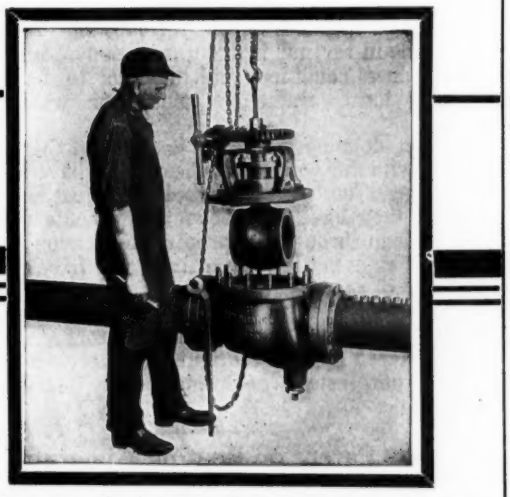
"S" *Brand*

HUNDREDS upon hundreds of tons of paper entering market today are manufactured with "S" Brand Silicate.

Informed paper makers prefer this silicate because of its alum economy. Be sure you specify the best— "S" *Brand.*

PHILADELPHIA QUARTZ CO.
General Offices and Laboratory
121 S. THIRD STREET, PHILADELPHIA
Chicago Office: 205 W. Wacker Drive
1831—BEGINNING ANOTHER CENTURY—1931

FAIRBANKS NEW "SPHERO" VALVE



Continuous operation in paper mills demands quick replacements to all equipment.
SPHERO VALVES are easily repaired without detaching the body from the pipe line.
Lever type in sizes ¼-in. to 4-in. Gear type in sizes 4-in., 6-in. and 8-in. For 200 Pounds Steam Working Pressure.

Write for Bulletin V-103

THE FAIRBANKS COMPANY
BOSTON NEW YORK PITTSBURGH
Factory: Binghamton, N. Y. *Distributors Everywhere*

West Virginia Pulp and Paper Company

Manufacturers of

SUPERCALENDERED and MACHINE FINISHED BOOK and LITHOGRAPHIC PAPERS

Offset, Envelope, Bond, Writing Cover and Music Paper, High Grade Coated Book, Index Bristol, Post Card, Kraft and Label Papers

also

Bleached Spruce Sulphite and Soda Kraft Pulp

230 Park Ave. New York — 35 East Wacker Drive Chicago
503 Market St., San Francisco, Cal.
Sixth and Chestnut Sts., Philadelphia, Pa.

New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, October 7, 1931.

Trading in the local paper market during the past week was more active than of late. Demand for the various standard grades of paper is expanding and the outlook for the closing months of the year is brighter. Sales forces of the leading paper houses are generally optimistic. The price situation, however, is far from satisfactory.

New print production in the United States and Canada is being maintained in sufficient volume to take care of current requirements. Newspaper circulations and the volume of advertising are showing the usual signs of improvement at this time of year. Strenuous efforts are being made to hold prices to the prevailing schedule.

The paper board market is exhibiting a stronger undertone. Box board production is heavier and is now being maintained at 71 per cent of capacity. Prices remain unchanged. The fine paper market is irregular. There are reports of concessions on book paper prices. Coarse paper prices, too, are easier, and kraft wrapping prices have declined slightly.

Mechanical Pulp

Demand for both imported and domestic ground wood is only moderately active. While prices on domestic mechanical pulp are holding to previously quoted levels, imported ground wood quotations are low. No. 1 imported moist mechanical pulp is now offered at from $24 to $26 per ton, while dry pulp is selling at from $25 to $26.50, on dock, Atlantic ports.

Chemical Pulp

Affected to some extent by the foreign exchange situation, chemical pulp prices are generally weaker. Imported bleached sulphite is now selling at from $2.40 to $3.50, and No. 1 kraft at from $1.45 to $1.75, on dock, Atlantic ports. Domestic bleached sulphite is offered at from $2.25 to $4.50, f.o.b., pulp mill. Other grades are practically unchanged.

Old Rope and Bagging

The old rope market continues in the doldrums. Demand for both domestic and foreign old manila rope is restricted, while small mixed rope is arousing little interest. Prices are nominal. The bagging market is fairly steady. Scrap bagging, in particular, is in satisfactory request. Gunny bagging is going forward in good volume. No radical price changes have been recorded.

Rags

Conditions in the domestic rag market are not showing much improvement. The various grades of cotton rags continue dull, with the exception of roofing grades, which are in seasonal request. With offerings rather limited, roofing rag quotations are firm. The foreign rag situation is uncertain, and dealers are generally awaiting stabilation of foreign exchange.

Waste Paper

The paper stock market continues to show improvement. Board mill demand for the lower grades is persistent, especially for No. 1 mixed paper and strictly folded news. Offerings of these grades are scarce, with the result that prices are steady to firm. The better grades of waste paper are also buoyant and quotations are being well maintained.

Twine

Steadiness prevails in the local twine market. While most of the business transacted of late has been along routine lines, the volume of sales booked during the past week equalled the record of a year ago. Despite keen competition for extra desirable orders, prices are generally holding to formerly quoted levels.

OPPOSE HIGHER FREIGHT RATE

(Continued from page 17)

short-haul commodities, which in turn, will not move via rail, but will move via truck. Carriers, therefore, will lose both the long-haul and short-haul traffic.

"The testimony shows that the salvation of our carriers is in reducing operating expenses, getting down to hard and fast railroading, eliminating excessive costs of circuitous routings and handling the transportation machine of this country in the same painstaking way that the other industries of the country are forced to do.

"The record indicates beyond all question that the carriers' decline in revenue is due to two things, one the subnormal business conditions and the other to their present high rates losing traffic to competitive transportation agencies.

"The Act does not give the commission the authority to comply with this petition, as the carriers have not shown that any single increased rate would be a just and reasonable rate; they have not shown the benefits that could accrue to them through the proper modification and readjustment of rates entirely out of line; they have not shown the increased revenue that would accrue if subnormal rates were increased to the proper basis. True, there might be a falling off in the volume of tonnage from the unduly prefered points of origin, but the carriers would make a profit instead of losing money on what they hauled."

Gets Patent on Beating Apparatus

[FROM OUR REGULAR CORRESPONDENT]

FULTON, N. Y., September 28, 1931.—A patent on a pulp beating apparatus invented here has been granted to John D. Haskell by the government authorities. The new invention consists of a combination tub, a pulp breaker, a beater roller and a series of receptacles arranged so as to receive the beaten stock. The patent also covers claims for a number of patentable features which are embodied in the construction of the apparatus. Application for patent was filed in November, 1929, and the inventor has assigned his interests to the Dilts Machine Works.

Arthur D. Little, Inc.

Chemists and Engineers to the Pulp and Paper Industry for over Forty Years

Laboratories and Experimental Mill

30 CHARLES RIVER ROAD, CAMBRIDGE, MASS.

Hardy S. Ferguson & Co.

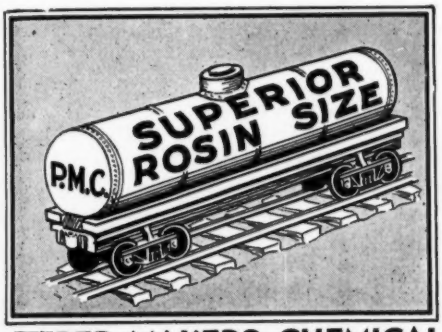
Consulting Engineers

200 Fifth Avenue, New York City

Hardy S. Ferguson .....Member A.S.C.E., A.S.M.E., E.I.C.
Moses H. Teaze.....Member A.S.M.E., E.I.C.
J. Wallace Tower.....Member A.S.C.E., A.S.M.E.

Consultation, reports, valuations, and complete designs and engineering supervision for the construction and equipment of

Pulp and Paper Mills and other Industrial Plants
Steam and Hydro-electric Power Plants
Dams and other Hydraulic Structures.



20 plants to serve You

PAPER MAKERS CHEMICAL CORP.
Kalamazoo, Michigan

V. D. SIMONS

INDUSTRIAL ENGINEER

Pulp and Paper Mills, Hydro-Electric and Steam Power Plants, Electrification Paper Mill Properties.

435 No. Michigan Ave.
CHICAGO, ILL.

GEORGE F. HARDY

Consulting Engineer

305-309 Broadway, New York City, N. Y.

Member—Am. Soc. C.E.—Am. Soc. M.E.—Eng. Inst. Can.

Consultation	Paper and Pulp Mills
Reports	Hydro-Electric and
Valuations	Steam Power Plants
Estimates	Plans and Specifications

H. S. TAYLOR

Consulting Engineer

Member Am. Soc. C. E.—Member Am. Soc. M. E.
Member Eng. Inst., Can.

PULP, PAPER, AND FIBRE MILLS
HYDRO - ELECTRIC AND STEAM
POWER PLANTS

PLANS-SPECIFICATIONS-EVALUATIONS
REPORTS - CONSULTATIONS

Jefferson St. Arcade, Dayton, O. — Guarantee Bldg., Montreal, P. Q.

Maximum Structural Strength with . . Minimum Weight

Send for Bulletin 30-2

FOR AIR-WATER-OIL AND GAS

In sizes 6" to 24" in diameter and lengths to 40 feet.

NAYLOR PIPE COMPANY
CHICAGO, ILL.

Sales Offices: New York - Philadelphia - Tulsa - Houston - Ft. Worth

WATER SOFTENING ZEOLITE

BASEX

for

Replacement in All Makes

of

ZEOLITE WATER SOFTENERS

Send for Leaflet A and Sample

INVERSAND COMPANY
CLAYTON, NEW JERSEY

Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, October 7, 1931.

BLANC FIXE.—The blanc fixe market was moderately active during the past week. Prices are holding to schedule. The pulp is quoted at from $42.50 to $45.00 per ton, while the powder is selling at from 3¾ cents to 4½ cents per pound, in barrels, at works.

BLEACHING POWDER.—While demand for bleaching powder is restricted, the market is in a fairly sound position. The contract movement is seasonal. Prices are steady. Bleaching powder is quoted at from $1.75 to $2.00 per 100 pounds, in drums, at works.

CASEIN.—The casein market is unchanged. Domestic standard ground is quoted at 6½ cents and finely ground at 7½ cents per pound. Argentine standard ground is selling at 8½ cents and finely ground at 9½ cents per pound, all in bags, car lot quantities.

CAUSTIC SODA.—Most of the business transacted in the caustic soda market was routine. Solid caustic soda is quoted at from $2.50 to $2.55; the flake and the ground are selling at from $2.90 to $2.95 per 100 pounds, in large drums, at works.

CHINA CLAY.—Trading in the china clay market was fairly active. Shipments against contract are moving with regularity. Imported china clay is quoted at from $13 to $21 per ton; domestic paper making clay is selling at from $7 to $11 per ton, at mine.

CHLORINE.—The position of the chlorine market is practically unchanged. Supplies are moving into consumption at a steady pace. Prices remain unaltered. Chlorine is quoted at $1.75 per 100 pounds, in tanks, or multi-unit cars, in ton lots, or over, at works.

ROSIN.—The rosin market again declined. The grades of gum rosin used in the paper mills are now quoted at from $3.85 to $3.90 per 280 pounds, in barrels, at works. Wood rosin is selling at $3.70 per 280 pounds, in barrels, on dock, car lot quantities.

SALT CAKE.—Steadiness prevails in the salt cake market. Prices remain unchanged. Salt cake is quoted at from $16 to $17; chrome salt cake at from $14 to $15 per ton, in bulk, at works. Imported salt cake is selling at from $15 to $15.50 per ton, ship side.

SODA ASH.—No radical changes were reported in the soda ash market. The contract movement is fairly satisfactory. Quotations on soda ash, in car lots, at works, per 100 pounds, are as follows: in bulk, $1.00; in bags, $1.25; and in barrels, $1.38.

STARCH.—The starch market is exhibiting a fairly steady trend. Supplies are going forward to the paper mills in moderate volume. Special paper making starch is still quoted at $2.67, in bags; and at $2.94 per 100 pounds, in barrels, at works.

SULPHATE OF ALUMINA.—Conditions in the sulphate of alumina market are little changed. Prices are holding to schedule. Commercial grades are quoted at from $1.25 to $1.40; while iron free is selling at from $1.90 to $2.05 per 100 pounds, in barrels, at works.

SULPHUR.—The sulphur market continues quiet. Sulphur is quoted at $18 per long ton on orders of 1,000 tons, or over, on yearly contracts; and at $20 per ton for any smaller quantity over that period. On spot and near by car loads, the quotation is $21 per ton.

TALC.—Paper mill demand for talc is fairly persistent. Contract shipments are going forward in moderate volume. Prices remain unaltered. Domestic talc is quoted at from $16 to $18 per ton, in bulk; imported talc at from $18 to $22 per ton, ship side.

Market Quotations

Paper

(F. o. b. Mill)

Ledgers	11.00	@38.00
Bonds	6.75	@53.25
Writings—		
Extra Superfine	14.00	@32.00
Superfine	14.00	@32.00
Tub sized	10.00	@15.00
Engine sized	6.75	@11.00
Book, Cased—		
S. & S. C.	5.25	@ —
M. F.	5.00	@ —
Coated and Enamel	6.75	@10.25
Lithograph	7.25	@11.75
Tissues—Per Ream—		
White No. 1	.65	@ .70
Anti-Tarnish M. G. only	.65	@ .70
Colored	.70	@ .90
White No. 2	.55	@ .60
Kraft	.65	@ .70
Manila	.55	@ .60
Manila—		
No. 1 Jute	9.00	@ 9.25
No. 2 Jute	7.75	@ 8.50
No. 1 Wood	4.00	@ 5.25
No. 2 Wood	3.50	@ 4.00
Butchers	3.37½	@ —
Fibre Papers—		
No. 1 Fibre	4.25	@ 5.50
No. 2 Fibre	4.00	@ 4.75
Common Bogus	1.50	@ 3.00
Screenings	2.00	@ 3.00
Card Middles	4.00	@ 5.00
Glassine—		
Bleached, basis 25 lbs., No. 1	.09¾	@ —
No. 2	.11¾	@ —
Bleached, basis 20 lbs.	.11¾	@ —
(Delivered New York)		
News, per ton—		
Rolls, contract	57.00	@ —
Rolls, spot	57.00	@ —
Sheets	62.00	@ —
Side Runs	42.00	@46.00
Kraft—		
No. 1 Domestic	4.50	@ 5.75
No. 2 Domestic	3.25	@ 4.50
Southern	3.00	@ 4.25
Imported	6.00	@ 7.00
Boards—per ton—		
News	26.00	@27.50
Straw	34.50	@45.00
Chip	25.00	@27.50
Binders' Boards	62.00	@70.00
Standard 85 Test Liner	32.50	@35.00
Sgl. Mla. Lt. Chip	37.50	@42.50
(F. o. b. Mill)		
Wood Pulp Boards	70.00	@80.00

Mechanical Pulp

(On Dock)

No. 1 Imported—		
Moist	24.00	@26.00
Dry	25.00	@26.50
(F. o. b. Mill)		
No. 1 Domestic	25.00	@30.00

Chemical Pulp

(On Dock, Atlantic Ports)

Sulphite (Imported)—		
Bleached	2.40	@ 3.50
Easy Bleaching	2.00	@ 2.10
No. 1 strong unbleached	1.80	@ 2.15
Mitscherlich unbleached	1.85	@ 2.10
No. 2 strong unbleached	1.70	@ 1.80
No. 1 Kraft	1.45	@ 1.75
No. 2 Kraft	1.40	@ 1.50
Sulphate—		
Bleached	2.75	@ 3.25
(F. o. b. Pulp Mill)		
Sulphite (Domestic)—		
Bleached	2.25	@ 4.50
Easy Bleaching	2.15	@ 2.35
News	1.80	@ 2.50
Mitscherlich	2.40	@ 2.55
Kraft (Domestic)	1.60	@ 2.75
(Delivered Paper Mills)		
Soda Bleached	2.75	@ —

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—		
New White, No. 1	6.50	@ 7.00
New White, No. 2	5.50	@ 6.00
Silesias No. 1	5.25	@ 5.50
New Unbleached	7.00	@ 7.50
New Blue Prints	4.00	@ 4.50
New Soft Blacks	3.50	@ 4.00
Blue Overall	5.00	@ 5.25
Fancy	3.00	@ 3.50
Washables	2.75	@ 3.00
Mixed Khaki Cuttings	3.50	@ 4.00
Pink Corset Cuttings	5.00	@ 5.50
O. D. Khaki Cuttings	4.50	@ 4.75
Men's Corduroy	3.00	@ 3.50
New Mixed Blacks	3.00	@ 3.25

Old Rags

White, No. 1—		
Repacked	5.25	@ 5.75
Miscellaneous	4.25	@ 4.75
White, No. 2—		
Repacked	3.00	@ 3.50
Miscellaneous	2.30	@ 2.50
St. Soiled, White	1.50	@ 1.75
Thirds and Blues—		
Repacked	2.25	@ 2.50
Miscellaneous	1.65	@ 1.85
Black Stockings	3.25	@ 3.75
Roofing Rags—		
Cloth Strippings	1.25	@ 1.30
No. 1	1.25	@ 1.30
No. 2	.90	@ 1.00
No. 3	.70	@ .80
No. 4	.65	@ .70
No. 5A	.50	@ .60

Foreign Rags

New Rags

New Dark Cuttings	2.00	@ 2.15
New Mixed Cuttings	2.10	@ 2.40
New Light Silesias	5.00	@ 5.38
Light Flannelettes	5.00	@ 5.25
Unbleached Cuttings	6.50	@ 6.75
New White Cuttings	6.00	@ 6.25
New Light Oxfords	5.00	@ 5.50
New Light Prints	3.10	@ 3.25

Old Rags

No. 1 White Linens	6.25	@ 6.50
No. 2 White Linens	5.25	@ 5.50
No. 3 White Linens	3.75	@ 4.25
No. 4 White Linens	2.25	@ 2.75
No. 1 White Cotton	4.50	@ 5.00
No. 2 White Cotton	3.50	@ 4.25
No. 3 White Cotton	2.50	@ 3.25
No. 4 White Cotton	1.50	@ 1.75
Extra Light Prints	1.90	@ 2.10
Ord. Light Prints	1.75	@ 1.90
Med. Light Prints	1.40	@ 1.55
Dutch Blue Cottons	1.50	@ 1.60
French Blue Linens	2.25	@ 2.40
German Blue Linens	2.00	@ 2.10
German Blue Cottons	1.35	@ 1.40
Checks and Blues	1.40	@ 1.45
Lindsay Garments	.90	@ 1.00
Dark Cottons	.70	@ .75
Old Shopperies	.65	@ .70
New Shopperies	.60	@ .65
French Blues	1.40	@ 1.50

Old Rope and Bagging

(Prices to Mill f. o. b. N. Y.)

Gunny No. 1—		
Foreign	1.55	@ 1.65
Domestic	1.65	@ 1.80
Wool Tares, light	1.15	@ 1.20
Wool Tares, heavy	1.15	@ 1.20
Bright Bagging	1.10	@ 1.15
Small Mixed Rope	.90	@ 1.00
Manila Rope—		
Foreign	1.75	@ 1.85
Domestic	1.90	@ 2.00
New Burlap Cut	1.70	@ 1.80
Hessian Jute Threads—		
Foreign	2.60	@ 2.75
Domestic	2.80	@ 3.00

Old Waste Papers

(F. o. b. New York)

Shavings—		
Hard, white, No. 1	2.65	@ 2.85
Hard, white, No. 2	2.10	@ 2.20
Soft, white, No. 1	2.10	@ 2.20
White envelope cuttings	2.35	@ 2.50
Flat Stock—		
Stitchless	.70	@ .80
Overissue Mag	.70	@ .80
Solid Flat Book	.60	@ .70
Crumpled No. 1	.48	@ .53
Solid Book Ledger	1.75	@ 1.85
Ledger Stock	.65	@ .75
New B. B. Chips	.20	@ .30
Manilas—		
New Env. Cut	1.75	@ 1.85
New Cuttings	1.40	@ 1.50
Extra No. 1 old	1.10	@ 1.25
Print	.45	@ .50
Bogus Wrapper	.45	@ .50
Container	.30	@ .35
Old Kraft Machine—		
Compressed bales	1.20	@ 1.30
News—		
No. 1 White News	1.60	@ 1.65
Strictly Overissue	.35	@ .45
Strictly Folded	.35	@ .40
No. 1 Mixed Paper	.25	@ .30
Common Paper		Nominal

87 YEARS EXPERIENCE

In Making

Felts for Paper Manufacturers certainly recommends our ability to satisfactorily serve your requirements.

OUR **TRIUNE** AND
MULTIPLE PLY
DRYER FELTS

English Weave—Fine Face Felt in Three, Four, Five and Six Ply—60" to 214" in width—insure large production. Absolutely no felt marks in paper.

FITCHBURG DUCK MILLS
Established 1844
FITCHBURG, MASS.

1864 **1931**

"EXCELSIOR" FELTS

for every grade of

PULP AND PAPER

We continue to maintain at the top the quality of Excelsior Felts, as we have done since we, as pioneers, made the first endless paper machine felts manufactured in America

Seamless felts for fast running.
Satin Style felts for finish.
Special felts to meet every condition.
Send us your felt problems.

KNOX WOOLEN COMPANY
CAMDEN, MAINE

SOLD BY
BULKLEY, DUNTON & COMPANY
75-77 Duane St., N. Y., and direct

Fourdrinier Wires, all widths up to 300 inches

DIMOND WIRES

NEUMEYER & DIMOND
Established 1904
82-92 Beaver St. New York

Dietz Towel Interfolding Machines
also

TOILET PAPER MACHINES
For making Toilet and Paper Towel Rolls
(With or without perforations)

AUTOMATIC TUBE MACHINES
For Making Wire-Stitched Toilet Tubes

Sanitary Crepe Towel Machines, Roll Tighteners, Slitting and Rewinding Machines, Drop Roll Slitting Machines, Photo Mount Beveling Machines, Rotary Card Cutting Machines, etc.
Correspondence solicited

DIETZ MACHINE WORKS
126-128 W. Fontaine Street
Cor. Waterloo St. (between Front & Second Sts.)
and below Diamond St.
Phila., Penna., U S A

WOOD PULPS

All Grades

CHICAGO OFFICE:
1460 Conway Building,
111 West Washington St.

Acer, McLernon & Company Limited

CANADA CEMENT BUILDING
MONTREAL, P. Q.

Twines

(F. o. b. Mill)

Cotton—			
B. C., 18 basis	.30	@	.32
No. 1	.20	@	.22
No. 2	.19	@	.20
No. 3	.17	@	.18
A. Italian, 18 basis	.36	@	.37
Finished Jute—			
Dark, 18 basis	.18	@	.20
Light, 18 basis	.20	@	.22
Jute Wrapping, 3-6 Ply—			
No. 1	.13	@	—
No. 2	.11	@	—
Tube Rope—			
4-ply and larger	.09	@	—
Fine Tube Rope—			
4-ply	.11	@	—
3-ply	.12	@	—
2-ply	.13	@	—
Paper Makers Twine Balls	.07	@	—
Box Twine, 2-3 ply	.07	@	.08
Jute Rope	.09	@	.10
Amer. Hemp, 6	.27	@	.29
Java Sisal—			
No. 1 Basis	.10	@	—
No. 2 Basis	.09	@	—
New Zealand Sisal	.10	@	—
Sisal Lath Yarn—			
No. 1	.12	@	.14
No. 2	.10	@	.12
Manila Twine	.21	@	.22

CHICAGO

Paper

(F. o. b. Mill)

Rag Bond	.30	@	.53¼
Water Marked Sulphite Bond	.09	@	.12
Sulphite Bond	.06¼	@	.11
Superfine Writing	.18	@	.24
No. 1 Fine Writing	.14	@	.18
No. 2 Fine Writing	.12	@	.14
No. 3 Fine Writing	.08½	@	.12
No. 1 M. F. Book	.06½	@	.07½
No. 2 M. F. Book	.05¼	@	.06¼
No. 1 S.&S.C. Book	.06¼	@	.07¾
No. 2 S.&S.C. Book	.05¾	@	.06½
Coated Book	.07½	@	.12
Coated Label	.07½	@	.10
No. 1 Manila	.04¼	@	.05¾
No. 1 Fibre	.04¾	@	.05¾
No. 2 Manila	.04¼	@	.04½
Butcher's Manila	.04	@	.04½
No. 1 Kraft	5.00	@	5.50
Southern Kraft	3.75	@	4.00
No. 2 Kraft	3.75	@	4.00
Wood Tag Boards	.04¼	@	.06¼
Sulphite Screenings	.03	@	.03¼
Manila Tissue	.07	@	.07½
White Tissue	.07¼	@	.07½

(Delivered Central Territory)

News, per ton—			
Rolls, contract	57.00	@	—
Sheets	62.00	@	—
Boards, per ton—			
Plain Chip	30.00	@	35.00
Solid News	32.50	@	37.50
Manila Lined Chip	40.00	@	45.00
Container Lined—			
85 Test	50.00	@	55.00
100 Test	55.00	@	60.00

Old Papers

(F. o. b. Chicago)

Shavings—			
No. 1 Hard White	2.35	@	2.40
White Env. Cuttings	—	@	—
No. 1 Soft Shavings	2.10	@	2.15
Ledger & Writings	.70	@	.75
Solid Books	.75	@	.80
Blanks	1.60	@	1.65
Krafts	1.25	@	1.35
New Kraft Cuts	1.35	@	1.45
Manila Env. Cuts	1.50	@	1.55
Ex. No. 1 Manila	1.25	@	1.30
Print Manila	.40	@	.45
Overissue News	.40	@	.45
Old Newspapers—			
No. 1	.35	@	.40
No. 2	.30	@	.35
Mixed Papers—			
No. 1	.28	@	.30
No. 2	.20	@	.25
Roofing Stocks—			
No. 1	30.00	@	—
No. 2	28.00	@	—

PHILADELPHIA

Paper

(F. o. b. Mill)

Bonds	.05	@	.40
Ledgers	.07	@	.40
Writings—			
Superfine	.12	@	.18
Extra fine	.16	@	.22
Fine	.15	@	.26
Fine, No. 2	.12	@	.25
Fine, No. 3	.07	@	.20
Book, M. F.	.04¼	@	.07
Book, S. S. & C.	.05	@	.07½
Book, Coated	.07	@	.16
Coated Lithograph	.06	@	.11
Label	.07	@	.11
No. 1 Jute Manila	.07	@	.09
Manila Sul., No. 1	.03¼	@	.05½
Manila No. 2	.03	@	.04
No. 1 Kraft	.05¼	@	.06
No. 2 Kraft	.03¾	@	.04¼
Southern Kraft No. 1	—	@	.04
Southern Kraft No. 2	—	@	.03¾
Common Bogus	.03	@	.04

(Delivered Philadelphia)

News Print Rolls	58.00	@	62.00
Straw Board	50.00	@	—
News Board	30.00	@	32.00
Chip Board	25.00	@	27.50
Wood Pulp Board	85.00	@	95.00
Binder Boards—			
No. 1, per ton	73.00	@	75.00
No. 2, per ton	63.00	@	65.00
Carload lots	62.00	@	67.00
Tarred Felts—			
Regular	52.25	@	54.25
Slaters (per roll)	.84	@	.94
Best Tarred, 1-ply (per roll)	1.95	@	2.10
Best Tarred, 2-ply (per roll)	1.50	@	1.60
Best Tarred, 3-ply	2.00	@	2.25

Domestic Rags (New)

(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1	.06	@	.06½
New White, No. 2	.05	@	.05½
Light Silesias	.05	@	.05½
Silesias, No. 1	.06	@	.08
Black Silesias, soft	.05	@	—
New Unbleached	.06	@	.06½
Washable, No. 1	.02½	@	.03
Blue Overall	.05	@	.05½
Cottons—According to grades—			
Washable, No. 2	.02	@	.02½
New Blue	.02	@	.02½
Fancy	.03	@	.03¾
New Black Soft	.03	@	.03½
New Light Seconds	.01¾	@	.02
New Dark Seconds	1.85	@	2.00
Khaki Cuttings—			
No. 1 O. D.	.04½	@	.05
No. 2 Mixed	.03½	@	.04
Corduroy	.02½	@	.03
New Canvas	.06½	@	.07
New Black Mixed	.03	@	.03½

Domestic Rags (Old)

White No. 1—			
Repacked	3.50	@	4.00
Miscellaneous	2.25	@	2.75
M. G.	4.50	@	—
Thirds and Blues—			
Miscellaneous	1.25	@	1.50
Repacked	1.75	@	2.00
Black Stockings (Export)	3.80	@	4.00
Roofing Stock—			
Foreign No. 1	1.15	@	1.25
Repacked	.80	@	.90

Bagging

(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	1.50	@	1.60
Domestic	1.75	@	—
Manila Rope	2.25	@	2.50
Sisal Rope	1.25	@	1.50
Mixed Rope	1.10	@	1.25
Scrap Burlaps—			
No. 1	1.50	@	1.60
No. 2	1.10	@	1.20
Wool Tares, heavy	3.00	@	—
Mixed Strings	1.15	@	1.25
No. 1 New Light Burlap	2.50	@	2.75
New Burlap Cuttings	2.00	@	2.25

Old Papers

(F. o. b. Phila.)

Shavings—			
No. 1 Hard White	2.30	@	2.50
No. 2 Hard White	2.00	@	2.25
No. 1 Soft White	1.75	@	2.00
No. 2 Soft White	1.40	@	1.50
No. 1 Mixed	.75	@	.80
No. 2 Mixed	.50	@	.55
Solid Ledger Stock	1.35	@	1.40
Writing Paper	.80	@	1.00
No. 1 Books, heavy	.70	@	.75
No. 2 Books, light			Normal
No. 1 New Manila	1.60	@	1.75
No. 1 Old Manila	1.25	@	1.30
Print Manila	.50	@	.55
Container Manila	.40	@	.45
Old Kraft	1.10	@	1.20
Common Paper	.30	@	.40
No. 1 Mixed Paper	.35	@	.45
Straw Board, Chip	.35	@	.45
Binders Board, Chip	.35	@	.45
Corrugated Board	.45	@	.50
Overissue News	.50	@	.55
Old Newspaper	.30	@	.35

BOSTON

Paper

(F. o. b. Mill)

Ledgers—			
Sulphite	.07½	@	.12½
Rag Content	.15	@	.30
All Rag	.38	@	.52½
Bonds—			
Sulphite	.06½	@	.11½
Rag content	.15	@	.30
All rag	.36½	@	.65
Writings	.06½	@	.20
Superfines	.11	@	.31
Book, Super	.06	@	.09
Book, M. F.	.05½	@	.08½
Book, Coated	.08½	@	.18
Coated Litho	.09	@	.12
Label	.09½	@	.15
Jute Manila No. 1	.11	@	.13
Manila, Sul. No. 1	.04¾	@	.06½
Manila, Sul. No. 2	.03¾	@	.04½
No. 1 Kraft	.04½	@	.05½
No. 2 Kraft	.03¾	@	.04½

(F. o. b. Boston)

Southern Kraft	.03¾	@	.04

(F. o. b. destination in carload lots, f. o. b. mill in less than carload lots.)

Common Bogus	.02	@	.02¾

(Delivered New England points)

News Print, rolls	—	@	56.50
Straw Board, rolls	.009	@	52.50
Straw Board in Sheets, basis 35s to 70s	—	@	50.00
Filled News Board	27.50	@	30.00
Chip Board	27.50	@	—
Chip Board (Creasing)	27.50	@	30.00
Single Manila Lined Chip	40.00	@	45.00
Single White, Patent Coated News Board—Binder	52.50	@	60.00
Wood Pulp Board	70.00	@	75.00
Binder Boards	67.50	@	75.00

Old Papers

(F. o. b. Boston)

Shavings—			
No. 1 Hard White	2.75	@	3.50
No. 2 Hard White	2.25	@	2.50
No. 1 Soft White	1.90	@	2.10
No. 2 Mixed	.60	@	.65
No. 1 Mixed	.90	@	1.00
Solid Ledger Books	1.75	@	2.00
Overissue Ledger Stock	1.35	@	1.60
Mixed Ledgers	1.15	@	1.30
No. 1 Books, heavy	.65	@	.75
No. 1 Books, light	—	@	.45
Crumpled Stitchless Book Stock	1.00	@	1.25
Manila Env. Cuttings	1.85	@	2.00
No. 1 Old Manila	—	@	1.00
White Blank News	1.50	@	1.60
Kraft No. 1	1.15	@	1.20
Manila	.90	@	1.00
No. 1 Mixed Paper	.25	@	.35
Print Manila	.40	@	.45
Overissue News	.40	@	.45
Old Newspapers	.32½	@	.40
Box Board, Chip	.20	@	.25
Corrugated Boxes	.37½	@	.47½

Bagging

(F. o. b. Boston)

Gunny No. 1—			
Foreign	1.55	@	—
Domestic	1.50	@	—
Manila Rope—			
Foreign	1.50	@	1.75
Domestic	1.75	@	2.00
Transmission Rope	1.25	@	1.40
Mixed String	.50	@	.55
Jute Rope	1.00	@	1.15
Jute Carpet Threads	.75	@	.90
Bleachery Burlap	2.50	@	2.75
No. 1 Scrap Burlap	1.10	@	1.25
Scrap Sisal	1.35	@	1.45
Scrap Sisal for shredding	1.50	@	1.60
Wool Tares, heavy	1.25	@	1.30
New Burlap Cutting	1.50	@	1.25
Australian Pouches	2.00	@	2.25
Heavy Baling Bagging	1.50	@	1.60
Paper Mill Bagging	.90	@	1.05
Bagging No. 2	.50	@	—
No. 1 Burlap	—	@	3.50

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New White No. 1	.06½	@	.07
New White No. 2	—	@	.06
Silesias No. 1	.06	@	.06¼
New Black Silesias	.02½	@	.02¾
New Unbleached	—	@	.08
Fancy	.04	@	.04½
Washable	.04	@	.04½
Cottons—According to grades—			
Blue Overalls	.05	@	.06
New Black, soft	.04	@	.04¼
Khaki Cuttings	.04	@	.04½
O. D. Khaki	.04½	@	.05
Corduroy	.03	@	.03½
New Canvas	.08	@	.08½

Domestic Rags (Old)

(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	4.75	@	5.25
Miscellaneous	—	@	4.00
White No. 2—			
Repacked	.04½	@	.05
Miscellaneous	.03½	@	.04
Twos and Blues	2.50	@	2.75
Thirds and Blues—			
Repacked	1.60	@	1.80
Miscellaneous	1.00	@	1.20
Black Stockings	3.25	@	3.50
Roofing Stock—			
No. 1	—	@	.63
No. 2	—	@	.58
No. 3	—	@	.53

Foreign Rags

(F. o. b. Boston)

Dark Cottons	—	@	.70
New No. 1 White Shirt Cuttings	6.50	@	6.75
Dutch Blues	—	@	1.80
New Checks & Blues	4.00	@	4.50
Old Fustians	1.55	@	1.65
Old Linsey Garments	.80	@	.90

TORONTO

Paper

(F. o. b. Mill)

Bond—			
No. 1 Sulphite	.10¼	@	—
No. 2 Sulphite	08½	@	—
No. 1 Colored	.11¼	@	—
No. 2 Colored	.09	@	.10½
Ledgers (sulphite)	—	@	—
Ledgers, No. 1	.36	@	—
Ledgers, No. 2	.27	@	—
Writing	.09½	@	.10
Book—			
No. 1 M. F. (carloads)	6.65	@	—
No. 3 M. F. (carloads)	6.20	@	—
No. 1 S. C. (carloads)	7.15	@	—
No. 3 S. C. (carloads)	6.65	@	—
No. 4 S. C. (carloads)	5.70	@	—
No. 1 Coated and Litho	12.50	@	—
No. 2 Coated and Litho	11.50	@	—
No. 3 Coated and Litho	10.00	@	11.50
Coated tinted	14.00	@	—
Wrapping—			
Rag Brown	4.95	@	—
White Wrap	5.25	@	—
"B" Manila	5.00	@	—
No. 1 Manila	5.40	@	—
Fiber	5.40	@	—
Kraft, M. F.	5.90	@	—
Kraft No. 2	5.40	@	—

(Delivered Toronto)

News, per ton—			
Rolls (contract)	56.50	@	57.00
Sheets	61.50	@	—

Pulp

(F. o. b. Mill)

Ground Wood	30.00	@	32.00
Sulphite easy bleaching	50.00	@	—
Sulphite, news grade	44.00	@	—
Sulphite, bleached	62.50	@	75.00
Sulphate	60.00	@	—

Old Waste Paper

(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut	2.80	@	—
Soft White	2.60	@	—
White Blk. News	1.50	@	—
Book and Ledger—			
Flat Magazine and Book Stock (old)	1.10	@	—
Light and Crumpled Book Stock	1.20	@	—
Ledgers and Writings	—	@	—
Manilas—			
New Manila Cut	1.50	@	—
Printed Manilas	.80	@	—
Kraft	1.90	@	—
News and Scrap—			
Strictly Overissue	.70	@	—
Strictly Folded	.70	@	—
No. 1 Mixed Paper	.60	@	—

Domestic Rags

(Price to mills, f. o. b. Toronto)

No. 1 White Shirt Cuttings	.09½	@	.10
Fancy Shirt Cuttings	.06	@	.06¼